PAINT and VARNISH Production

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

CONVENTION ISSUE

...EMBER 952

NEWPORT TALL OIL GLOSS OILS
AS DIFFERENT AS DAY FROM NIGHT

AND WHAT A DIFFERENCE

Saves Money

Newport now offers you Paler Tall Oil Gloss Oils than you have ever been able to purchase or make in the varnish kettle . . . and you CAN GET THEM in TANK CARS or in DRUMS.

Newport T-GLO'S dry right. The "bugs" are really removed. Saves you money on rosin.

Why get all your drying from expensive bodied oils? Let the fatty acids in Newport's Tall Oil Gloss Oils show you a worthwhile oil saving.

You want easy grinding with good flow, minus objectionable sagging. Newport T-GLO'S bring these advantages. Write for a sample today.

NEWPORT INDUSTRIES, INC.

230 PARK AVENUE — NEW YORK 17, N. Y.

REICHHOLD

FOR INCREASED PROFITS
AND EFFICIENCY....
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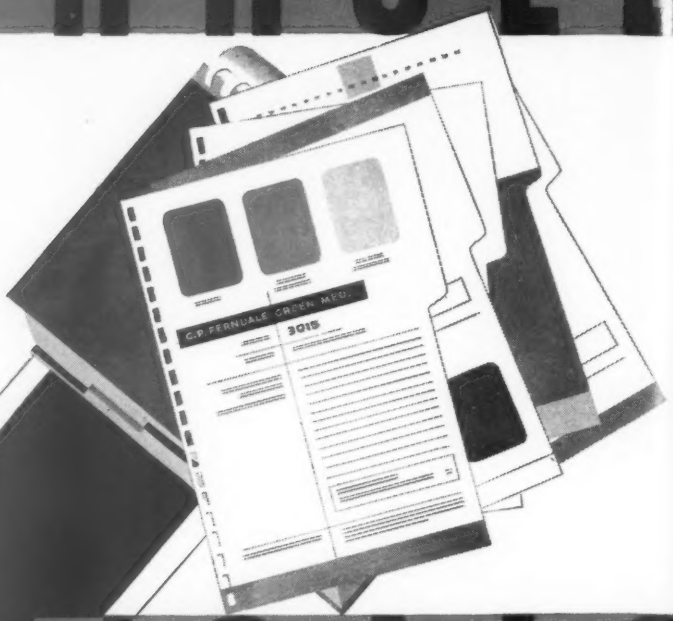
COLOR INVENTORY!



CHEMICALS

● Streamline your color inventory . . . carry fewer color standards, buy in greater quantities, and *pay less!* Reichhold has developed a simplified line of "all-purpose" colors. Instead of the usual 2,000 color standards, RCI has thinned the line down to 86 basics . . . these have been formulated for more diversified end-use to give you a *complete* color line at far less cost. Ask your RCI salesman to check your color inventory with you. And remember, RCI is always your best color buy for top quality, realistic prices, prompt service and up-to-date technical information.

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SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • PHENOL • GLYCERINE
PHTHALIC ANHYDRIDE • MALEIC ANHYDRIDE • SODIUM SULFATE • SODIUM SULFITE

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NEW! ODOREX DRIERS

- Impart no odor to paints before, during or after drying.
- Equal in drying performance to other standard driers.
- Metal content guaranteed within ±0.1% by exclusive Nuodex certification.
- Completely soluble, stable and intermixable as concentrates or dilutions in vehicles and pigmented compositions.

THE ODOREX LINE

Specifically developed by Nuodex for odorless paint systems. Made from selected and specially treated fatty acids and odorless-type solvents.

Now available in the three most important metals:

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ODOREX MANGANESE—6%

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Company Name.....
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City.....State.....

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that insures perfect performance in your

odorless paints

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PAINT and VARNISH Production

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 42 NOVEMBER, 1952 NO. 11

NEXT ISSUE

The December issue of PAINT AND VARNISH PRODUCTION will carry a complete resume on the activities of both annual Paint Conventions and Paint Industries' Show. This will include abstracts of the various technical papers delivered at the Federation Meeting, a write-up of new raw materials and developments featured at the Paint Industries' Show, and complete details of National Association Meeting.

★ FEATURES

★ DEPARTMENTS

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A. L. BENDER
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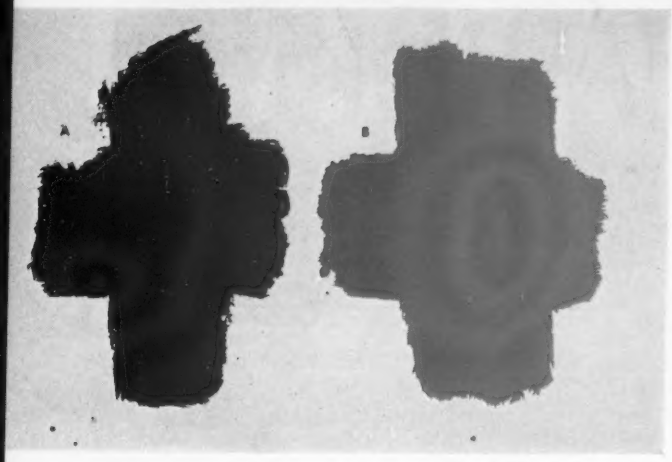
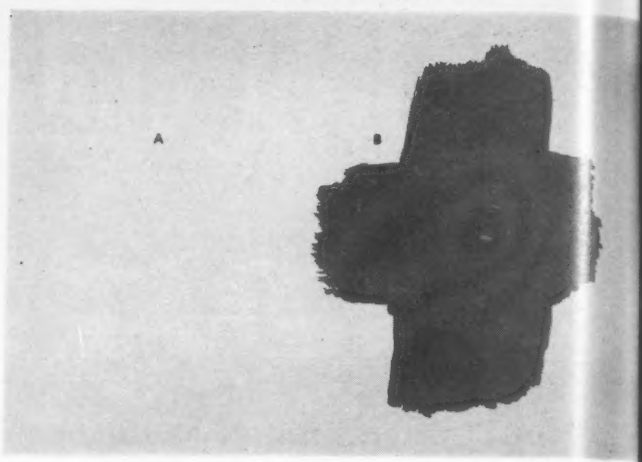
Photograph of front of sheet



A. Brush-out of one-coat flat enamel made from Cyanamid's new REZYL Resin 405-18.*

B. Brush-out of standard oil base one-coat flat enamel.

Photograph of back of sheet



A. REZYL Resin 405-18 enamel did not penetrate the sheet of paper.

B. Note penetration of oil base enamel.

Which paint did not penetrate?

Announcing: A New Cyanamid Resin for Non-Penetrating Flat Finishes...REZYL® 405-18

When properly pigmented, REZYL 405-18—an oil-modified alkyd resin—produces white, pastel and deep-tone colors with all these advantages:

Non-penetrating properties	Film uniformity
Easy brushing	Color retention
High scrub resistance	Fast dry

Flat finishes made from REZYL 405-18 show *no differences* in color and gloss when applied to surfaces ranging in porosity from gloss enamel to wallpaper!

Write for technical data or samples.

*Brush-outs of the two enamels were made on the sheet of paper at the same time.

AMERICAN *Cyanamid* COMPANY

COATING RESINS DEPARTMENT

30 Rockefeller Plaza, New York 20, N. Y.

Editorial Comment

Your Conventions

AS YOU all know, this year's Paint Conventions will be held in Chicago. Both the National Paint, Varnish and Lacquer Association and the Federation of Paint and Varnish Production Clubs have planned unique programs which will be of interest to all segments of the paint industry.

With changes dominating business activity today, the Association's program is designed to furnish its members with basic information needed to guide them in their business operations. In this connection, Ralph S. Trigg, Senior Deputy Administrator for the Defense Production Administration, will discuss the future of controls and the effect of the defense build-up on the paint industry.

A departure from normal procedures is the series of forums which have been arranged. These include a lacquer panel for manufacturers of industrial finishes. Representatives of the steel, aluminum and lumber industries, and an executive of the Munitions Board will discuss new uses for lacquer and answer specific questions from members of the finishes industry. The Trade Sales forum will discuss such problems as merchandising aids for dealers, the use of color as sales promotion, the expanded program on moisture condensation and other matters. The Wholesale-Distributors Division will consider problems of distribution, warehousing costs, building potential markets and means of sales training. There will also be forums for manufacturers of roof coatings and putty and glazing compounds.

Again by popular demand, Leo Cherne, noted economist and author, and presently executive director of the Research Institute of America, will speak on "1953" and the outlook for business under the newly elected administration.

Dr. Clarence Manion, former Dean of the School of Law, Notre Dame University, has chosen for his subject "Blueprint for Freedom". He will discuss steps which must be taken to protect the American way of life.

"Progress through Education and Research" will be the theme of the 30th Annual Meeting of the Federation.

Among the program highlights are the keynote speech by Dr. J. S. Long who will talk on "Research and Education", and the Joseph J. Mattiello Lecture, "Unexplored Fields in Exterior Paints" by John R. MacGregor. Also of particular interest to the technical men of the paint industry are the formal presentation of the Color Aptitude Test, the report of the Evaluation Committee on pure ester films, reports on other research programs, the initial presentation of the Educational Paint Course Package, and four practical round-table discussions dealing with latex paints, corrosion, dispersion, gadgets and gimmicks.

As in previous years, several constituent club papers will be presented including one from the Birmingham Club in England, and another by a parallel organization, the Oil and Colour Chemists' Association.

67 Exhibitors

This year's Paint Industries' Show consists of 67 exhibitors and offers a unique opportunity to see the most recent developments in materials and equipment for the paint industry and to discuss these improved products with the many technical representatives in attendance at the exhibits. A highlight of this exhibition is the Cooperative Lacquer Exhibit showing the latest in nitrocellulose development. Visitors will learn about the latest methods of application, durability data, developments in furniture finishing, equipment news, military lacquers, new emulsion techniques, and aerosol formulations. Twenty-three firms are participating in this exhibit.

Both the Association and Federation have arranged comprehensive programs for their respective meetings. In whatever capacity of the paint industry you may be in, you'll undoubtedly find some phase of these meetings a help to you in your work. So avail yourself of this opportunity and make it your business to attend this year's Paint Conventions in Chicago.

THIS IS YOUR invitation to drop in at **BOOTH 69** at the Paint Convention at the Palmer House. Our demonstration of **EDGAR A. S. P.** . . . inert pigments that improve your product . . . in a full range of shades in

LATEX EMULSION FORMULATIONS,

we know will be of real interest to you. A special dramatic test result of **SUSPENSION QUALITIES,** plus an interesting series of panels of **METAL PRIMERS** will also be featured. If you can't make the show but would like to have all the facts on Edgar ASPs (Aluminum Silicate Pigments) and how they may improve **YOUR PRODUCTS,** the coupon will bring you full technical information . . . no obligation, of course. But we hope you will be able to be at the show . . . it is going to be a good one.

EDGAR BROTHERS CO.

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Sorry, cannot make the show but would like full technical information on your EDGAR ASPs.

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Firm.....

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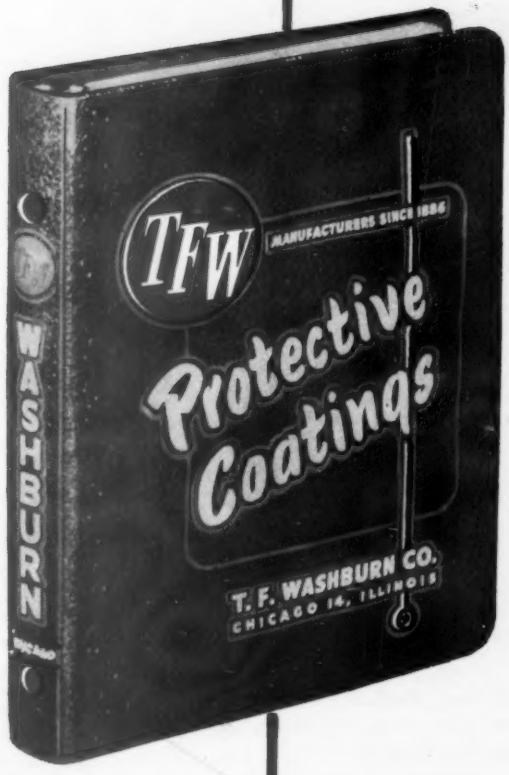

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Is your plant here?

If your plant is in the St. Louis area, you're close to Canco's St. Louis plant.

This plant, along with the others at locations listed below, produces a full line of containers for paint manufacturers, from putty cans, turp cans, etc., to paint cans of all sizes and descriptions.

Not only can Canco supply you with the finest full line of cans available anywhere—but wherever you are, there's a Canco plant which offers prompt delivery.

Canco's Research Laboratory and Technical Service Laboratories have the skill and knowledge to solve customer production problems that may arise.

These are just a few of the many reasons so many paint manufacturers like to do business with Canco.

***Here are the cities** in which there are Canco plants manufacturing paint cans. Which one is nearest you? Why not ask a Canco salesman for the full story?*

Jersey City	Portland, Oregon
Philadelphia	San Francisco
Chicago	Los Angeles
St. Louis	Hamilton, Canada
New Orleans	Montreal, Canada
Vancouver, Canada	

AMERICAN CAN CO.

CANCO

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CHICAGO
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Save with Celanese* Solvents

profit column

n-PROPYL ACETATE

can save you up to 6¢/gal. as your medium-boiling solvent

Gain superior resin compatibility and improved lacquer odor

Celanese n-Propyl Acetate is the newest of the Celanese Solvents that enable you to cut production costs while maintaining highest performance standards.

Medium boiling, low viscosity ester. N-Propyl Acetate is a medium boiling, low viscosity solvent with a pleasant odor and excellent blush resistance. As a low-cost replacement for other ester combinations of similar quality, it is saving lacquer manufacturers up to 6¢ a gallon on their finished product. Produced under controls that assure uniformity and high purity, Celanese n-Propyl Acetate gives you maximum quality at minimum cost.

Split shipments in compartmented cars. Your Celanese representative will be glad to show you how you can now realize additional savings and convenience through split shipments of Celanese Solvents in compartmented tank cars and wagons at lowest bulk prices.

Celanese Product Evaluation Laboratory. Use the facilities of the Celanese Product Evaluation Laboratory to check n-Propyl Acetate in your own formulation against any series of tests you designate. Write for samples and Technical Bulletin N-29, to Celanese Corporation of America, Chemical Division, Dept. 558-K, 180 Madison Avenue, New York 16, N. Y.

PROPERTIES

Color	15 APHA
Spec. Grav.	0.880 - 0.885 @ 20/20°C
Boil. Pt.	95°C - 103°C
Ester Content	90% - 92%

OTHER SOLVENTS BY CELANESE

Solvent 203	Solvent 301
Solvent 601	Solvent 901
n-Propanol	Isobutanol

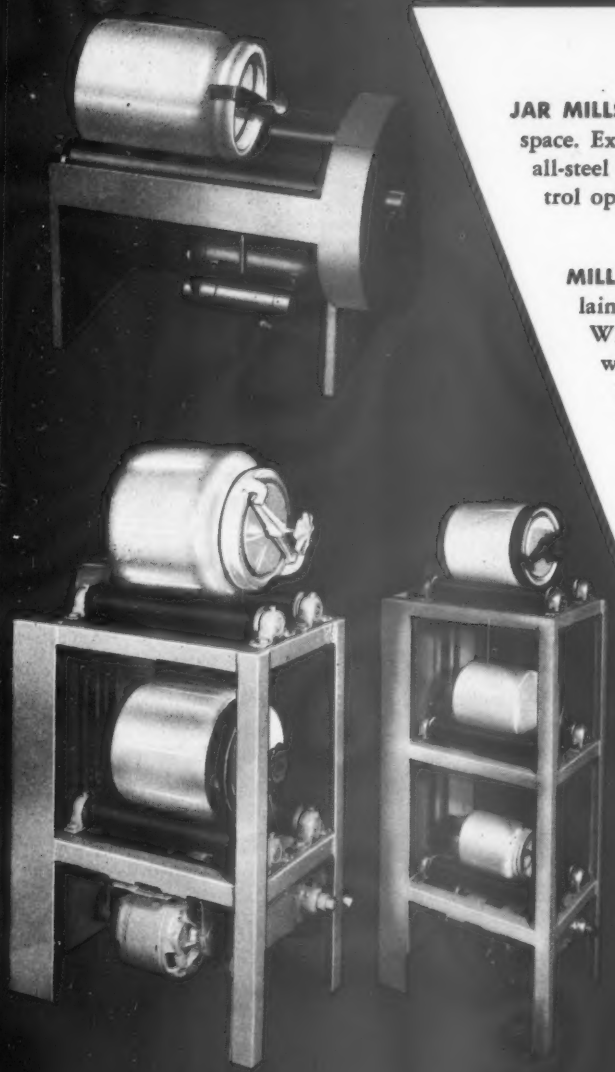
Celanese* CHEMICALS

*Reg. U. S. Pat. Off.

FAST...EFFICIENT...COMPACT...STURDY

"U. S." GRINDING EQUIPMENT

FOR THE LABORATORY—FOR SPECIALIZED PRODUCTION



JAR MILLS: A "unitized" line of jar mills tiered to save space. Exclusive roller design keeps jars centered. Sturdy all-steel frame. Heavy duty drive with variable speed control optional. Available in models to take 1-12 jars.

MILL JARS: Made of strong, solid, "high-fired" porcelain with fast, positive, "all-in-one" locking device. Wide mouth for easy loading and unloading. Long wearing and non-contaminating. Gasket supplied in rubber, cork, or plastic. Six sizes — one to six gallon capacity.

BALL MILLS: Barrel of heavy-walled, one-piece, "high-fired" porcelain. Resistant to thermal and mechanical shock — built for long wear. Frame of rugged, welded, all-steel construction. Drive is extra-powerful with heavy chain for long life. Available in 10, 25, and 50 gallon capacities.

BURUNDUM: White, cylindrical medium that gives faster, finer grinds. Extra-hard, extra-heavy, extra-tough. Unique shape gives more grinding area per contact; high specific gravity gives more contacts per minute; greater hardness gives longer wear—minimum contamination.

SEE THEM AT THE SHOW — BOOTHS 21 & 22

U. S. STONEWARE

PROCESS EQUIPMENT DIVISION • AKRON 9, OHIO

NEW alkyd resin

Syntex 71

WITH new Syntex 71 you can now extend your odorless line of paints to include quality architectural gloss finishes. This resin will produce full-bodied enamels having high gloss with excellent gloss retention, color retention and brushing properties.

By combining only two resins, Syntex 71 (for gloss formulations) and Syntex 141 (for flats), you can prepare a complete line of odorless primer-sealers, undercoaters, deep-tone flats, semi-glosses, four-hour enamels, and floor paints.

Suggested formulations are available for this complete line of odorless paints. Full production quantities available immediately.

Write today for free samples

JONES-DABNEY COMPANY
Louisville 8, Kentucky

PHYSICAL CONSTANTS OF SYNTEX 71

Viscosity	Z4-Z6
Wt/gallon	7.45-7.55
Solids	60%
Acid Value	4-7
Color	7 Maximum
Solvent	Odorless Mineral Spirits
Red. Viscosity	T-V @ 50% solids in Odorless Mineral Spirits

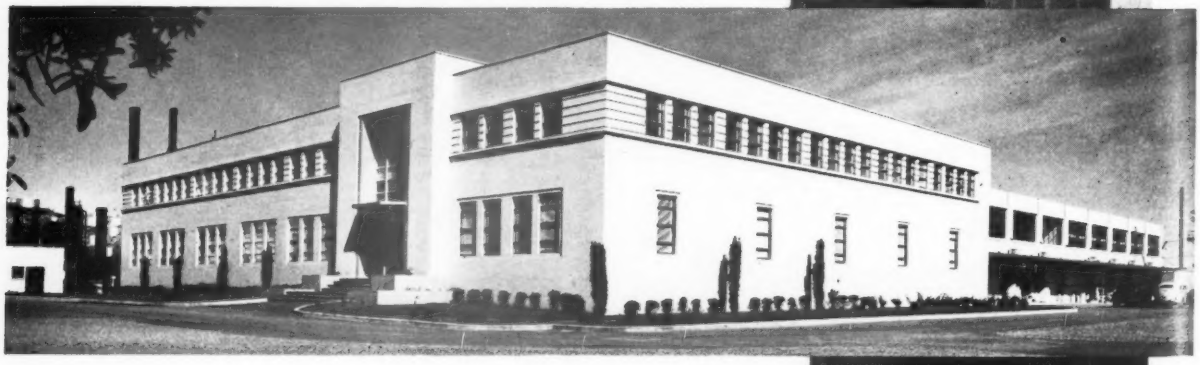
JONES-DABNEY CO.

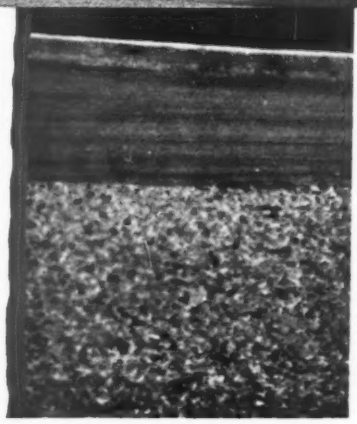
DIVISION OF DEVOE & RAYNOLDS COMPANY, INC. Louisville, Ky. • Newark, N. J. • Los Angeles, Calif.

Research

and development work
is carried on continuously at the
Richmond Laboratories of the
California Research Corporation
on

Oronite Naphthenate Driers

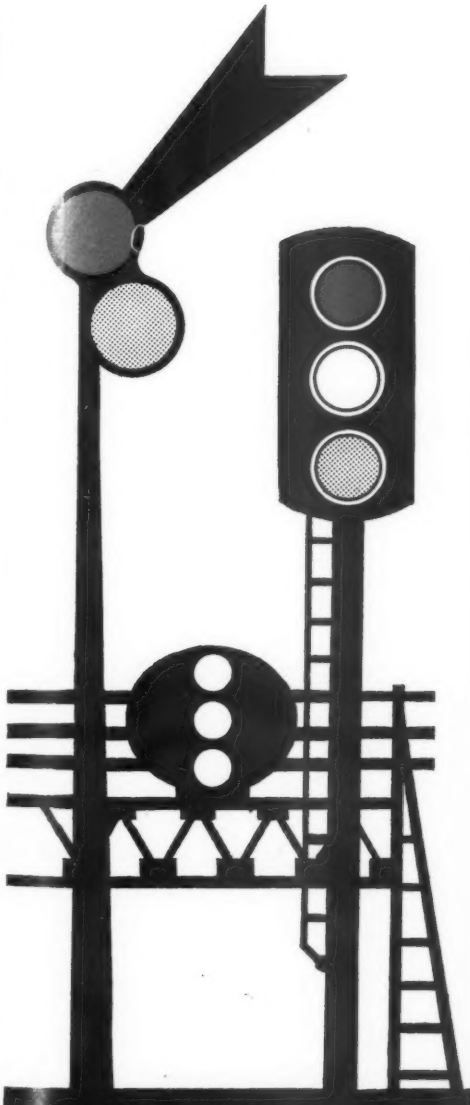




NAFTONE

NAFTONE, INC., 515 Madison Ave., New York 22

SAVE MONEY with safer colors for latex paints



New dispersions tested and recommended by ANSBACHER-SIEGLE . . .

1. They are easy to use formula-wise.
2. They are standardized for shade and strength to insure uniformity, even though dry color content may vary slightly.
3. Color costs are constant.
4. There are no involved computations for the formulator.
5. They are economical because of their maximum dispersed form.
6. The pastes are soft and free-flowing, therefore easy to handle.
7. Grinding is NOT essential.
8. Easy miscibility and complete compatibility give RAINBOW VERSATILITY!

FOR YOUR FILE: Write for our report, "Important Notes on Colors for Latex Emulsion Paints."

AT YOUR SERVICE: Our skilled technicians are available for consultation--without obligation.

"Ride the rainbow" with A-S colors

a century of color experience

ANSBACHER-SIEGLE CORPORATION

pioneer producers of Organic Pigments

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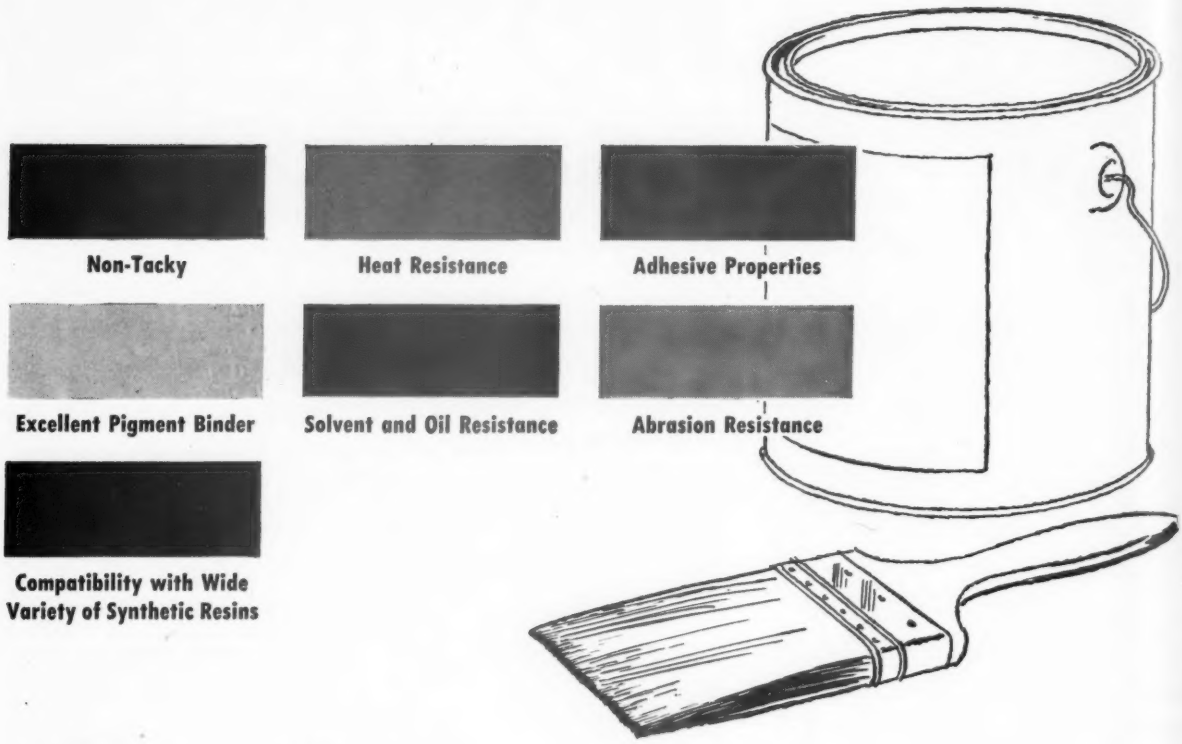
News about

B. F. Goodrich Chemical *raw materials*



Seven Ideas for paint formulations – with HYCAR latex!

USED as a pigment binder in many fields, Hycar latex has properties that may give you ideas for developing or improving paint formulations. For information about Hycar latices, write Dept. HS-11 B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario. Cable address: Goodchemco.

Hycar American Rubber

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

Linstyrol

A NEW SPENCER KELLOGG STYRENATED OIL

LINSTYROL increases the potential protective coatings applications of styrenated oils with its greatly improved compatibility with regular solvents, resins, unbodied and bodied vegetable oils.

Linstyrol is made from refined linseed oil rather than an oxidized or conjugated oil. Its films are brilliantly clear with excellent hardness.

The properties of Linstyrol suggest its use as a fortifying oil, cold cut with resins to produce special vehicles and particularly for alkyd resins with excellent drying, hardness and gloss characteristics.

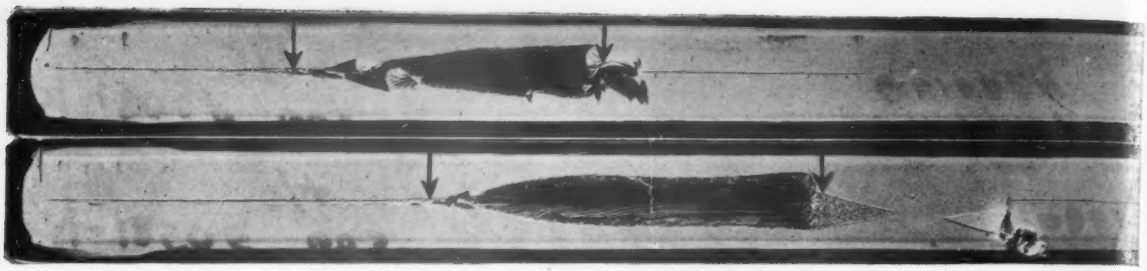
Samples are available. Write to the Spencer Kellogg Technical Service Department.

CHEMICAL CONSTANTS OF LINSTYROL

	Acid Value	Color (Gardner)	Specific Gravity	Iodine Value	Sap. Value	Visc.
LINSTYROL	2 max.	5 max.	.995-.999	90-110	90-95	Z2-Z4

SPENCER KELLOGG AND SONS, INC.
BUFFALO 5, N. Y.
The First Name in Vegetable Oils

KELLOGG'S THE TEST TELLS 1804

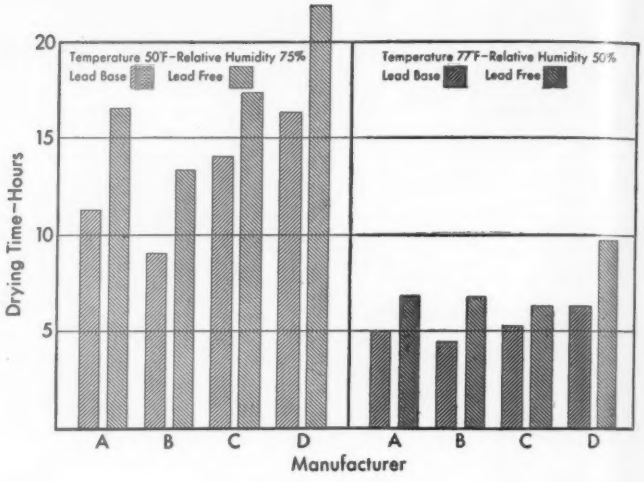


Drying tests: ¾ actual size.

"Lead" HOUSE PAINTS dry faster!

Drying tests, under controlled temperature and humidity conditions, of four sets of house paints—three national brands; one made to Federal specifications—prove *conclusively* that paints containing white lead *dry faster!*

Especially in humid, dusty environments where prolonged wetness picks up damaging dust particles and debris, house paints with white lead in their formulations dry *set-to-touch* three to six hours sooner than lead-free paints.



"LEAD" LENGTHENS THE LIFE OF PAINT BECAUSE:

It Stabilizes . . . neutralizes acidic compounds resulting from the decomposition of the vehicle—prevents the film from becoming soft or liquifying.

It Plasticizes . . . forms lead soaps which increase film flexibility.

It Strengthens . . . flexible, spiny, lead-soap particles mechanically reinforce the film and increase elastic strength.

It Resists Water . . . paint films with an optimum, lead-pigment content absorb only a small fraction as much water as do lead-free paints.

It Limits Oil Penetration . . . more of the vehicle remains in the film where it is needed; less is absorbed in the substrata.

It Improves Appearance . . . by controlling chalking and inhibiting mildew.

The graph speaks for itself. The figures, taken from a standard, generally-accepted, stylus-type drying recorder—and confirmed by duplicate tests in separate laboratories—show clearly how white lead shortens the drying-time of house paints.

"Lead" base and lead-free house paints, all mixed the same day, were applied to test panels to a thickness of three mils. Three paint manufacturers, (A, B and C) each supplied a set of two brand-name paints—one "lead" base and one lead-free—for the tests. The fourth set (D) was made to Federal specifications: TT-P-102 ("lead" base), and TT-P-103 (lead-free). Two separate tests were made under different atmospheric conditions (warm and dry; cool and humid).

●

These are valid reasons for the use of lead pigment in *your* paint formulations . . . all valid sales arguments. For detailed information on the most effective use of white lead in your paints—write for "White Lead in Mixed Pigment House Paints" and "White Lead Technical Bulletin #1." *Lead Industries Association, 420 Lexington Avenue, New York 17, N. Y.*

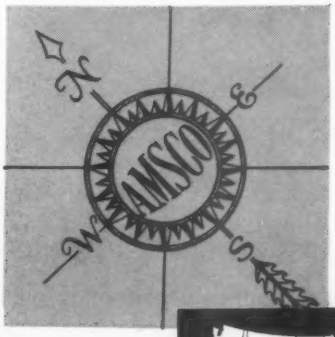
Visit our booths, Nos. 59 and 60, at the Seventeenth Annual Paint Industries' Show, Palmer House, Chicago, November 18 to 22, 1952.

1615

HERE IT IS!

AMSCO Naphthol Spirits

a new solvent
with unusually high
flash point (102°F)
extra fast dry time
(335°F-D.P.)



manufactured under rigid control
to meet exacting specifications

complete technical data, prices
and samples available
on request

AMERICAN MINERAL SPIRITS COMPANY

230 North Michigan Avenue, Chicago 1, Illinois
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NOW A TEAM of Truly Odorless Solvents!

SINCLAIR ODORLESS SOLVENT LIGHT

SINCLAIR ODORLESS SOLVENT HEAVY

SINCLAIR ODORLESS SOLVENT LIGHT

Distillation Range

IBP.....350°F EP.....400°F

Kauri-Butanol Value 26

SINCLAIR ODORLESS SOLVENT HEAVY

Distillation Range

IBP.....375°F EP.....465°F

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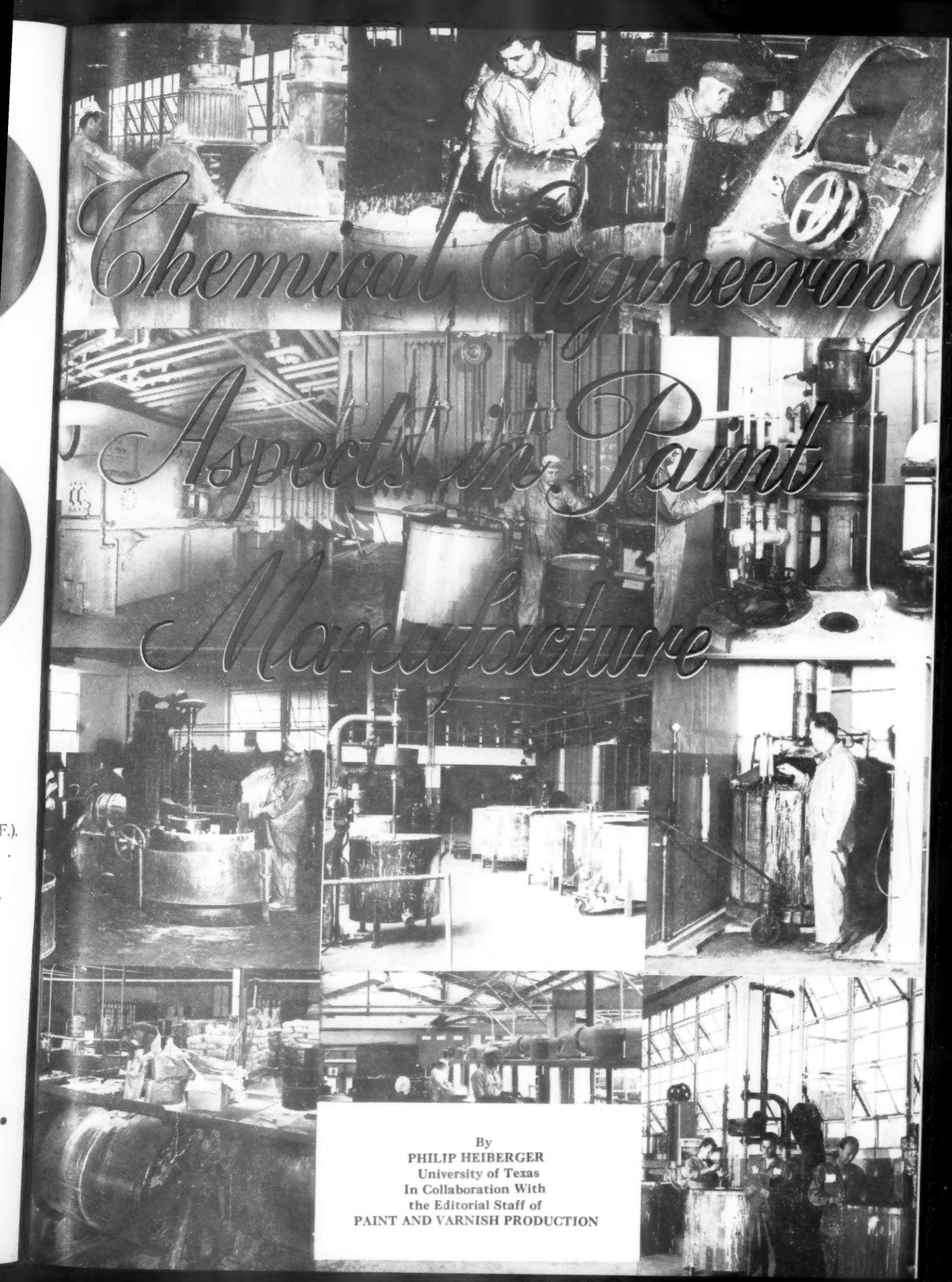


Chemical Engineering Aspects in Paint Manufacture

By
PHILIP HEIBERGER
University of Texas
In Collaboration With
the Editorial Staff of
PAINT AND VARNISH PRODUCTION

Chemical Engineering Aspects In Paint Manufacture

ALTHOUGH chemistry is an exact science individual chemical principles can rarely be applied directly to industrial applications. Consequently many of the fundamental laws and concepts of chemistry are idealizations often limited to laboratory scale operations. Nevertheless such laws do provide powerful, theoretical and practical tools for considering the operations normally encountered in chemical manufacture. The inability to recognize the empirical nature of seemingly exact laws is often responsible for the failure of chemically trained men in chemical production.

In many operations of practical importance, the exact laws are so complex that they are unknown. In such cases, empirical correlations must be utilized employing any data available. The fact that many of these empirical methods cannot be considered in an exact treatment of the subject is immaterial. An engineer must be willing to accept any working rule, even though the origin is obscure and lacks theoretical implications.

Fundamentally, the chemist and the engineer are motivated by different psychologies, philosophies, and over-all objectives. Chemists should strive unremittingly for the truth. Engineers, however, must be more realistic. Like politicians, they must be practical enough to recognize that certain principles can be compromised.

The attitudes of the chemical engineer have made very little impact upon the paint industry. Until recently, the technical phases were completely dominated by chemists. Most of the technically trained sales and administrative personnel were chemists rather than engineers. Even the production men were chemically trained. As a rule, very few graduate engineers entered the paint industry and those that did were placed in the formulating laboratories.

Chemical Engineering

WITH the expansion of the chemical industry prior to World War I, the complexity of the problems indicated the need for a distinct branch of engineering to solve chemical production problems. The logical development was the concept of chemical engineering as a separate branch in its own right, not a composite of chemistry and mechanical engineering.

Even as late as 1940, the chemical engineer's education was largely the same as the chemist's, but with enough additional training to be familiar with the operation of certain types of chemical equipment. A process was thought of in terms of the chemistry involved and the operations were analyzed in terms of that process only. The chemical engineers were classified according to the industries they served; that is, sulfuric acid, alkali, rubber, soap, textile, paint and so on. No common bond was recognized between these different industries and there was little interchange of ideas or equipment among them. With respect to plant operations, this is the status of the paint industry today.

As the chemical industry developed, it became apparent that certain engineering operations previously considered unique to specific processes were, in fact, common to many industries. It was recognized, for example, that principles governing transportation of liquids and the flow of heat were universally applicable, that distillation problems, whether involving alcohol, gasoline or ammonia were similar, that the extraction of oil from oil seeds was comparable to the extraction of copper from ore and so on. It was then obvious that many unit operations were poorly understood and required intensive study and elaboration. Detailed knowledge of these operations was basic to an understanding of manufacturing processes; thus the field of chemical engineering became established as the field covering unit operations.

Unite operations are physical rather than chemical in character. They are comparatively few in number, but the conditions under which they are conducted vary most widely. They depend upon the materials in process, the size of the operation, the temperature involved, the pressure of operation, the rate of mixing, the order of addition and other processing factors. The chemical engineer must be thoroughly familiar with the chemical and physical properties of the materials under consideration. Of necessity, he must also know the utility and limitations of construction materials, the laws of heat flow, the properties of the frictional fluid films as well as the many other practical factors upon which a process may depend.

Unit Operations

ALTHOUGH the unit operations involved in paint manufacture are few in number, namely, mixing, dispersion, and to a much lesser degree, filtration and material flow, they enjoy the dubious distinction of being the least understood and in some respects the least studied of the engineering operations. The most important paint making operations are mixing and dispersion, yet to date, there are no formulae or equations, even empirical, that can be used to calculate the requisite speed of mixing for any given set of conditions.

Each industry using mixing operations developed its own equipment. As a result there are an almost infinite number of mixers, both good and bad. Not only is such diversification unnecessary and uneconomical, but it prevents proper coordination of existing data.

The lack of scientific correlation is not too serious for an industry geared to small scale batch operations where labor is the major overhead. Savings in power made possible by efficient mixing would really be insignificant. However, as the scale of operations increases, power savings as high as 30 to 1 become feasible and therefore become an important consideration. Even more important to both small and large producers is the fact that with proper equipment, greater production can be achieved in less time.

Unlike the paint making operations, an enormous amount of information about many other unit operations is available — operations no more difficult or complex than those involved in paint production. For example, distillation, extraction, absorption, evaporation, flow

of gases and heat transfer. Why? In its early days, the petroleum industry operated on an empirical basis. Their products were crude, the volume was relatively low and the production losses were high. With the increasing demand and resulting increase in production, the trial and error, rule-of-thumb methods had to be discarded. Since the products supplied in the beginning were essentially specific fractions of crude oil, the methods of separation were physical involving distillation and extraction. For this reason, the petroleum people became interested in unit operations, not chemistry.

Because chemical engineers were comparatively rare in the early 1920's, the petroleum people employed physical chemists with an interest in distillation. In addition, fellowships were created at universities where chemical engineering was taught. In consequence the art of distillation was developed so well that nearly all known volatile mixtures can now be separated to as high a degree of purity as desired. One may distill binaries or complex mixtures under conditions of high vacuum or high pressures, at high or at low temperatures or with columns one centimeter or forty feet in diameter.

When we consider the tremendous amount of work, the mass of published data, textbooks and accumulated experience, it may be anticlimactic to note that the science of distillation is still relatively immature. Considering this, what can one say about the lesser known operations such as mixing and dispersion?

One success usually breeds others. As the courses in the chemical engineering curriculum multiplied and as chemical engineering developed as a profession, the study of distillation, heat transfer, extraction, fluid flow and absorption continued to be taught and studied. In sharp contrast, subjects such as mixing and dispersion were given little attention under university auspices.

For that matter, chemical engineering has failed to accord to batch operations the importance they merit. In the effort to develop the chemical industry on a continuous production basis, chemical engineers apparently overlooked the fact that many chemical industries are inherently batch industries. For example, paints, inks, plastics, pharmaceuticals, cosmetics, foods, dyestuffs and the various chemical specialties. Many of the operations required in paint production are equally important to other batch producers.

The engineers have excelled in production methods involving large-scale continuous operations. While the volume of production involved is tremendous, it is interesting to note that the number of large scale installations is small in relation to the number of batch producers. In neglecting batch operation research, an important segment of the chemical industry is technically undeveloped.

Paint courses, as taught today, emphasize the study of raw materials, the chemistry of resins and high polymers, the chemistry of film formation and test methods. The types of equipment suitable for various operations are treated only superficially. This is not surprising because there is little agreement among different plants, and the same product may be processed under different conditions. No one would attempt to formulate a resin or varnish without adequate laboratory verification. Tables are available with which one can correlate the laboratory data with the heating and cooling requirements necessary for production. Even so, many varnish and resin batches are ruined because the agitation is inadequate at some point; this results in local overheating and subsequent charring. Even the large producers incur losses due to off-color batches. Pebble and ball mills are frequently over-or under-loaded. Impossible demands are often made of grinding equipment because of the results of unrealistic laboratory experiments.

Only within the last few years has the industry made a cooperative effort to collect and correlate data pertaining to ball mills. Despite the meagre information collected, startling improvements have been made in ball mill operation. The success in this direction points up the value of engineering research and should serve to inspire similar action in other areas.

The remainder of this article will discuss the two main engineering operations commonly used by the paint industry. The approach will be strictly from the unit operation point of view. Operational procedures and equipment details will be largely ignored. It is hoped that this procedure will demonstrate that even from sparse data it is possible to extract valuable information.

Although the universities and research foundations are neglecting the development of the batch unit operations, it is indeed fortunate that the manufacturers of processing equipment are not ignoring these fields. The advances that have been made are due almost exclusively to the efforts of the equipment manufacturers' engineering staffs.

Mixing

As mentioned earlier, despite the frequent use of mixing in industry, this operation is probably the most difficult of the chemical engineering unit operations to correlate scientifically. To date, no really good equation is known which can be used to calculate the correct speed of mixing for a given set of conditions. Mixing may be defined as the production of irregular disturbances or turbulent motion within a fluid by means of mechanical devices acting on that fluid.

Brown et al. (1) defines four general types of operations, each type requiring different agitation equipment.

Mass Transfer in Heterogeneous Systems

This category involves chemical reactions, solutions of solids, extraction, absorption and adsorption. The agitator must disperse as well as produce turbulence thereby promoting mass transfer between the phases. The agitator must produce flow velocities sufficiently high to prevent settling out of particles or stratifying of phases. There must be no dead spaces in the agitation system which would allow one of the phases to concentrate there.

The intensity of turbulence must be uniform throughout the whole tank in order to promote mass transfer at all points of interfacial contact. Small impellers operating at high speeds produce high stream velocities but concentrate the turbulent zone near the impeller; on the other hand, large impellers operating at low speeds produce uniform turbulence throughout the tank but may develop velocities too low for good suspension or dispersion of phases. Consequently medium size impellers operating at medium speeds are recommended for this type of operation.

Mixing or Blending of Two Liquids

In continuous flow, two liquids may be mixed simply by passage through a centrifugal pump where intimate contact results. In batch mixing or blending in a large tank, the agitator must pump large streams of the liquids to all points in the system. After the masses of liquid have been pumped around and mixed on a bulk scale, the final localized mixing depends upon the intensity of turbulence at all points or upon molecular diffusion. The most important part in this operation is the large-scale flow to all points in the system for without this any high intensity turbulence at any point will accomplish nothing. Therefore, for mixing or blending two or more fluids, large impellers operating at low speeds are generally superior to small impellers operating at high speeds.

Physical Change or Emulsification

Some operations, such as the emulsification of two immiscible liquids, require an extremely high rate of shear or intensity of turbulence at some point in the system. Usually the liquids will be fairly well mixed before arriving at this point of high shear. If the operation is conducted in a batch in a large tank, a gradual turnover of all the tank contents is required to bring all portions into a highly turbulent zone. Small

impellers operating at high speeds with small clearances between the impeller and fixed surroundings are especially suited to produce the high shearing stresses required for this operation.

Heat Transfer and Uniformity of Temperature

Heat transfer is often a necessary accessory to certain mass transfer operations, especially those involving chemical reactions. Consequently, reaction tanks are equipped with heating (or cooling) coils or jacketed walls. Adequate velocities past the heat exchange surfaces are necessary to promote heat transfer. In such cases, the agitator impeller should be located near the coil or jacketed walls. Moreover, the impeller must produce large volume streams of flow, so that all the contents of the tank will be brought in the neighborhood of the heat transfer surfaces if uniform temperatures are to prevail throughout the system. Large impellers operating at low speeds will usually be suitable for this operation.

In a few instances it may be necessary to prevent localized overheating of a certain area of heat transfer surface by allowing the impeller to scrape such a surface or by employing a small high speed impeller to develop high turbulence in the immediate vicinity of the surface.

In considering these requirements, one must bear in mind that at higher viscosities the zone of high turbulence surrounding the impeller is contained in a smaller volume. Therefore, large impellers are required to mix viscous fluids uniformly.

Physical Factors

Of the various physical factors involved in mixing, the most important one is the consistency or apparent viscosity of the mixture at mixing velocity. This requires a knowledge of the various viscous conditions such as plasticity and thixotropy at the various temperatures of mixing. Other important factors are the specific gravity of the mixture and the relative gravities of each phase, the ease of wetting, surface tension, particle size of the solids being dissolved, temperature effect of addition and variations of consistency during mixing.

Most of these factors can be determined experimentally, but they cannot be correlated. Whereas in many of the other unit operations, the known facts may be utilized by means of suitable formulae, nomographs or charts, it is not so with mixing. Thus in the proper choice of mixers for a given operation, the experience and good judgement of the plant engineer or equipment manufacturer plays the important role.

Because the majority of agitators are of the rotating impeller type, there are some correlations available. It is possible to determine the power consumed by rotating agitators such as reciprocating agitators, circulating pumps, air agitation systems, homogenizers and jet agitators. One can then compute the total power requirements by adding the friction losses in bearings, drives and motors to the calculated power requirement of the mixer.

There are, of course, correlations reported in the literature, but those are usually quite specific and limited to a particular process utilizing a singular piece of equipment. In ordinary industrial practice, the engineer normally assumes that the effectiveness of similar agitation equipment will remain more or less the same if the same power per unit volume of fluid is supplied to the impeller. This means that in the design of a plant-size mixer, a laboratory experiment is made with small-size equipment which is geometrically similar to the proposed commercial installation. Knowing that the small mixer will do the required job, the large-size mixer may be specified with the same geometrical proportions and with the same power per unit volume of fluid as was used in the laboratory.

At best the power per unit volume theory is only a good approximation. It does not take into account the actual intensity of turbulence, cross currents or eddies developed in the liquid, which are often the real factors governing the operation in question.

Classification of Mixing Equipment

Valentine and McLean (2) classify mixers into five primary categories incorporating altogether 40 distinct types. These are:

A. Flow mixers.
B. Paddle or arm mixers.
C. Propeller or helical mixers.
D. Turbine or centrifugal-impeller mixers.
E. Miscellaneous.

Typical post agitator

Flow Mixers

Flow mixers are those in which the materials are practically always pumped through the mixer with the mixing effect produced by interference with flow. They are used only in continuous or circulating systems for the thorough mixing of miscible fluids. They are rarely used for the mixing of two phases where extreme intimacy is desired. In the paint industry, this class is limited and is represented by gas spargers, centrifugal pumps and injectors.

Low head room slow speed mixer

Paddle Mixers

Paddle or arm mixers consist of one or more blades on a horizontal, vertical or diagonal shaft which is rotated within the container. Thus, the material to be mixed is actually pushed, or carried around in a circular path. In thin liquids and in unbaffled containers, paddles always impart a swirling motion to the entire contents of the container. In all cases, that material directly in the path of the blades is always pushed faster than that lying between the blades. This factor has the greatest influence in changing the relationship of successive strata parallel to the blades with respect to each other.

Having accomplished this important step, however, paddles lack effective means of producing, perpendicular to the blades, forces that would cut through these strata and cause them to mix with each other. This is their greatest shortcoming. Stratification is largely overcome by the installation of baffles in the tank; the paddle then may be operated more slowly or may be shortened to keep the power requirement reasonably low. Tilting the paddle blade increases axial flow in a baffled tank, but has practically no effect in a low-viscosity liquid in an unbaffled tank.

Paddle mixers, or arm mixers, are more widely used than any other type

Portable mixer

because (1) they are oldest, best known and first to be thought of; (2) often they can be homemade; (3) the first cost is usually quite low; (4) above all, on many kinds of work they are entirely satisfactory. For example, in the mixing or kneading of heavy pastes or plastics the arm type is indispensable. However, where stratification may easily occur, as in the suspending of fairly heavy solids in light liquids or the mixing of light pastes or liquids of considerable viscosity, a paddle mixer, no matter how carefully it is designed, is comparatively inefficient both as to power consumed and as to quality of results.

Equipment of this class includes such familiars as simple paddle mixers, gate mixers, paddles with intermeshing stationary fingers such as lead mixers, horseshoe mixers, pony mixers, planetary-motion paddles and heavy duty kneaders such as the familiar Banbury mixers.

Propeller Mixers

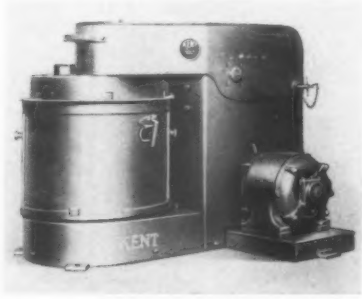
Propeller mixers furnish an inexpensive, simple and compact means for mixing in a wide variety of cases. Their mixing action follows from the fact that the revolving helical blades constantly push forward what is to all intents a continuous cylinder of material to move in a straight line; the shape of container itself will govern the subsequent disposition of this stream.

Liquid mixer

In this case therefore, the shape of the container is particularly important, and yet this factor is often neglected.

Propellers are most effective for liquids not over 2000 centipoises apparent viscosity, with or without the presence of light solids, though useful up to 4000 centipoises. Where the specific gravity of the solids differs substantially from that of the liquid, some difficulty is experienced in preventing settling, since it is practically impossible to direct the stream from the propeller to all parts of the tank.

The portable mixers with vertical shaft, angular, off-center propeller, propeller in side of tank are familiar examples of this class of mixers.



Twenty gallon mixer

Turbine Mixer

The turbine mixer is best described as one or more centrifugal pumps working in a tank against practically no back pressure. The material enters the impeller axially through the central opening. The material is accelerated by the vanes and is discharged more or less tangentially from the impeller and at fairly high velocity. A curved stationary deflecting-blade ring, which deflects these tangential currents to a radial direction, may be used. The entire direction changes from vertical to horizontal, and radial direction is thus accomplished smoothly with the smallest possible loss of kinetic energy, and as a result, the radial currents are still traveling at high velocity when they reach the remote parts of the container. The entire contents of the tank are kept in vigorous and well-directed motion.

Turbine mixers are especially useful for mixing viscous liquids or heavy slurries, for suspending heavy solids, for rapid dissolving, for good dispersions and for mixing in irregularly shaped containers. This category of mixers include the simple turbine mixer, turbine mixer with stationary deflecting blades and the turbodisperser.

Of the many miscellaneous types, those most familiar to the paint processing industries include ball and pebble mills (used as mixers), colloid mills, homogenizers and putty chasers.

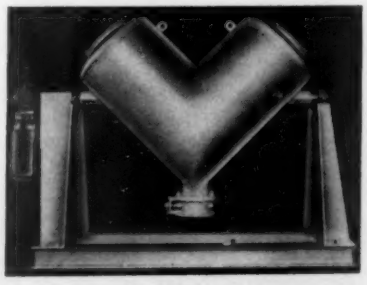
Angular change tub mixer

Grinding

As an engineering unit operation, developments in "grinding" are practically at a standstill. Much of the newer equipment such as Banbury mixers and two roller mills now used by the modern paint plants were developed originally for use in the rubber industries. Even so, the principles of their operation is not novel. It will be shown that of necessity, work in this field is highly empirical. Needless to say, the primary object of paint "grinding" is to incorporate a variety of pigments into various liquid vehicles. The types of equipment commonly employed for this operation include the various roller mills, ball and pebble mills, heavy duty paste mixer, colloid mills and stone mills.

Although the term "grinding" is commonly used, most paint men recognize that the correct designation for this operation is "dispersion." The engineer usually associates the word "grinding" with particles size reduction. It is true that some pigments do undergo size reduction during ball mill operation but the breakdown is only incidental and not of much importance consequently the term "dispersion" is more definitive and the one to be used.

Regardless of the procedure followed or the kind of equipment used to carry out pigment dispersion, several basic steps are always involved. Pigments cannot be manufactured in the form of discrete particles because they tend to agglomerate into aggregates. Furthermore, the aggregates as well as the



Twin shell blender for dry materials

individual particles are surrounded by a film of air. Therefore, the first step in dispersion involves the breakdown of the agglomerates. This must be accomplished while simultaneously displacing the air film with a vehicle film. The second step, the wetting of each pigment particle with vehicle prevents re-agglomeration. In a final step, the vehicle-wet pigments are uniformly distributed throughout the vehicle. The breakdown, wetting and displacement of air and dispersion are accomplished mechanically through the application of shear forces.

The wetting of pigment and displacement of the air film is best accomplished by adding the pigment in small quantities to the liquid in the mixer. As the liquid advances into the channels and capillaries of the pigment mass, the air is displaced. During mixing, the pigment particles are not altered in size; however, the aggregates may be partially broken up. This operation is aided by mixing the paste stiffer thus increasing the shearing forces required and by soaking overnight.

The action of the mixer is continued in the mill under conditions of higher shear by adjustment of clearance. The adjustment of mill clearance is very much dependent upon the condition of the paste coming from the mixer. The higher shear on the mill will break down the smaller aggregates and disrupt the finer capillaries, thus permitting the escape of entrapped air released through further vehicle displacement.

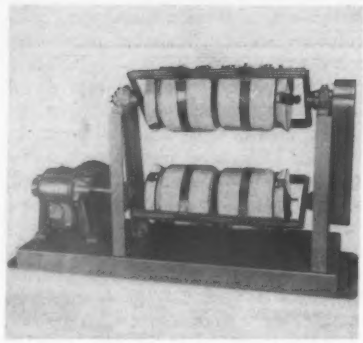
In comparing mills of different construction and operation, three factors need consideration. They are:

(1) the clearance between the grinding surfaces;
(2) the relative velocity with which the surfaces are moving in relation to each other;
(3) the plastic viscosity of the composition.

These define the limits in which a mill acts as a crusher and indicate the magnitude of the shearing forces within the mixture. Estimated clearances and approximate viscosity limits for mixers and mills of widely different types are given by Fischer (3) in Table I.

Variables in Mixing

WHEREAS it may be difficult to correlate the variables involved in mixing, it is practically impossible to obtain a satisfactory engineering correlation for the dispersion process. The variables involved are of such magnitude and of such complexity that even the data for individual variables are practically unknown. Off hand, the following variables would have to be considered before arriving to any reasonable scientific solution:



Typical cradle type jar mills

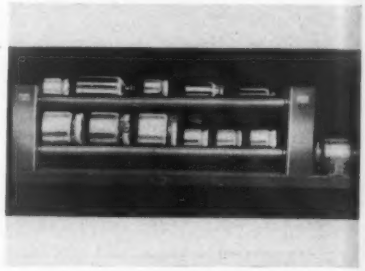
surface area of the pigments,
the energy released in formation of new surfaces during dispersion,
alteration of crystal character due to high localized pressures,
changes in surface occurring during dispersion,
decomposition of vehicle during dispersion,
degradation of polymers due to local heating effects,
viscous behavior of the mixture over the entire range of application,
distribution of shear forces,
time of contact,
equipment clearances,
rates of flow,
throughput,
capacity,
effects of pigment or vehicle blending,
effects of surface agent,
particle size distribution of the pigments
relative speed of rolls,
pebble size and many others.

Because of the numerous variables involved, of which many are not understood, dispersion will probably remain the most obscure unit operation for many more years. This field should prove to be a fertile and practically inexhaustible one for engineering research. Although much has been written on mill operation and despite the importance of mills in many industries, practically nothing has been published on the engineering factors or theory of operation. Successful operation depends almost exclusively on the skill of the operators and upon empirical adjustment of formulations to suit the available equipment.

Basically then, mills differ only in their utilization of three fundamental requirements — mixing, pressure and shear. The ratio of these factors differ in various mills, consequently a given mill is best suited for certain types of products rather than for all types.

Dispersion Methods

IN THE paint industry, dispersion is accomplished by the following means: (1) combination of a mixer and roller mill, (2) heavy dispersion mixer, and (3) the pebble or ball mill. The



Double tier jar rolling mill

dispersion process first involves a wetting of the pigment particles followed by a dispersing action, which in the trade is known as "grinding". For heavy dispersion mixer processes, the pigment-vehicle combination should have a very high consistency. In the mixer-roller mill methods, the mixture should have a heavy to medium consistency. And for pebble milling, the mixture should have a low consistency and high mobility.

Mixer-Roller

In the case of the mixer-roller mill

Table 1

Estimated Clearance and Approximate Viscosity Limits for Various Mills

Mill	Clearance (mils)	Plastic-viscosity range (poises)
Roller (3, 4, 5 rolls)	0.2 - 1.0	10 - 10,000
Rubber (2 rolls)	50 - 250	100,000 - 50,000,000
Dough Mixer	infinite	100 - 1,000,000
Banbury	infinite	100 - 50,000,000
Colloid	1 - 10	1 - 100
Uniroll	variable	1 - 1000
Steel Ball	—	1 - 200
Flint Pebble	—	1 - 100
Buhrstone	1 - 10	1 - 100

dispersion procedure, there are two phases to be considered: (1) the mixing and the wetting of the pigment, and (2) the dispersion of the pigments. For best grinding, the importance of proper premixing and wetting of the pigment cannot be over emphasized.

One method employed to wet pigments is "weak mixing". This procedure consists of loading the vehicle into the mixer, and sifting in the pigment while the vehicle is being agitated. Throughout this operation, there is an excess of vehicle relative to the pigment present. This results in a slurry of pigment lumps wetted only on the outside. In addition, the air is poorly eliminated from the pigment; the pigment is drowned in an excess of vehicle and the pigment lumps produce an aggregate condition.

The New York Paint and Varnish Production Club is given credit for a procedure known as "two-stage mixing" which has decided advantages over the "weak-mixing" method.

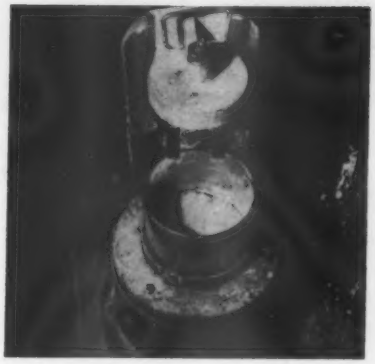
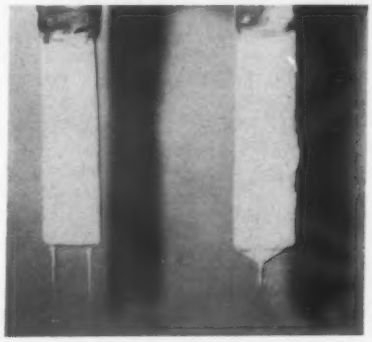
In this procedure, the mixing tank is loaded with the requisite amount of vehicle which previous experience has shown will wet down the pigment in about 2 minutes. The entire amount of pigment required for paste formulas is then loaded on top of the liquid before the power is turned on. Usually the ratio of pigment to vehicle concentration in this procedure is 2 to 1.

As the rotation of the mixer blade proceeds, the initial wetting of the pigment mass and the simultaneous elimination of air produces at first a ball-like condition. Because of the high structural strength of the vehicle and the high concentration of the pigment employed, strong shearing forces are produced by the continued rotation of the mixer blades. The weak pigment masses or potential aggregates which were formed in the initial stage of the mixing are shorn apart by the forces transmitted by the vehicle under the driving force of the machine. As a result, the ball-like mass subsides into a smooth, flowing paste. Although the mixing operation is continued for only a few minutes, the major portion of the shearing work has been completed at the time subsidence or "break" of the paste has been obtained.

To assure adequate wetting of the pigment, the mixing is continued for a few more minutes, and then sufficient vehicle is added to the paste to produce the consistency considered desirable for dispersion on the roller mill.

This type of mixing results in the elimination of air, a finely dispersed pigment and the absence of pigment lumps.

As a consequence, the "intensively" mixed type of paste when processed on the roller mill gives the following performance:

INTENSIVE MIXING	WEAK MIXING
	
Intensive Mixing — Initial loading	Weak Mixing — Sifting in
	
Intensive Mix — Paste free from lumps	Weak Mix — Lumpy paste
	
Intensive mix paste in the mill hopper	Weak paste in the mill hopper
	
Absence of abrasion — Intensive mix paste	Abrasion from weak paste aggregates

1. A high degree of shear.
2. No slippage on the rolls, since there is little or no air to be eliminated.
3. Little or no compression of pigment particles in aggregates.
4. High rate of production.
5. Absence of mill abrasion.

The pigmented composition obtained by the "intensive" paste is characterized as follows:

1. Well wetted and dispersed pigment particles.
2. Few aggregates present.
3. No locked-in air.
4. Excellent texture.
5. High gloss, high reflectance, and high opacity.

In contrast, the "weak" type of paste gives the following roller mill performance:

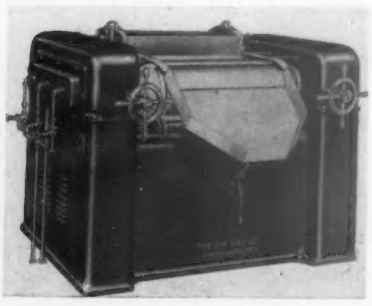
1. Low order of shearing action.
2. High amount of slippage on the rolls due to the entrained air.
3. High amount of compression of the pigment masses into hard aggregates.
4. Slow rate of production.

As expected, the "weak" paste have the following adverse characteristics:

1. Hard aggregates developed by compression.
2. Aggregates containing locked-in air.
3. High order of grittiness.
4. Poor gloss because of locked-in air and poor texture.
5. Reduced opacity since poor dispersion has prevented full utilization of the pigment.
6. Discoloration by mill abrasion.

Roller Mills

The roller mill is perhaps the most versatile piece of equipment available to the paint manufacturer today and as such it finds general application in the manufacture of pigmented materials. Dispersion in roller mills may be attributed to the crushing action of the rolls where a pincer type action is employed to break down particles by relatively slow squeezing between hard surfaces. The shearing action is created by the counter rotation and the speed of each roll. The speed differential between the pickup and the output roll is in the vicinity of a one to three ratio. The transfer of the paste from one roll to the other is accomplished through control of pressure at the point of contact; with the aid of the speed differential the pigment particles are subjected to a thorough wetting action by the surrounding vehicle particles. The ground portion is removed from the discharge roll by a scraper blade attached to the upper portion of the discharge apron.



High speed three roller mill

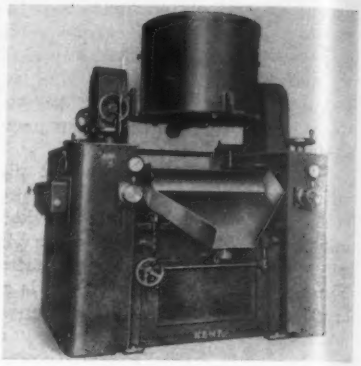
During the actual grinding operation, a film of appreciable thickness is formed at the first nip and here the pigment aggregates are subjected to a vigorous crushing action. Further abrasive action is exercised by the action of the rolls rubbing against one another at differential speeds. At this point due to the thickness of the film there is no apparent sign of any hydraulic shear taking place. At the subsequent nip the film is much thinner and this reduction is more than compensated for by the speed of the top takeoff roll. Therefore at this point since we have a much thinner film we get a very vigorous crushing action.

Normally, a roller mill receives a coarse dispersion directly from a paste mixer. Therefore wetting and displacement of air is accomplished prior to the actual milling operation. The required shear forces will be developed through the differential speeds of the adjacent rolls and the magnitude of these forces will depend upon the physical properties of the paste, the differential speed of the two adjacent rolls and the pressure exerted between the rolls.

From a practical standpoint, the volume and quality of output is the important practical consideration. It is well known that the thicker the film on the roll, the higher is the output. The following table relates the output to paste consistency for a five-roll, high speed, 13" x 32" mill (3):

Consistency Rating	Output in lbs per hour
Very thin	30 - 130
Thin	80 - 230
Medium Stiff	120 - 180
Stiff	550 - 1400

It is not the purpose of this survey to discuss practical mill operation, but a few engineering factors may be in order. The rolls on a roller mill are usually hardened steel cylinders, which are hollow to permit internal cooling. These rolls are ground on specially built grinding machines to great accuracy. Normally the deviations of the rolls from the ideal cylindrical form are $\pm$ 2 microns. Thus two rolls working together can in the most unfavorable case give an inaccuracy of 4 microns. Comparing this inaccuracy with the average pigment particle size of 1 to 5 microns, the error is quite substantial.



Three roller mill with tilting-can hopper

Furthermore, this error cannot be reduced even with an excessive increase in cost. This is also true for the eccentric running of the rolls and the clearance in the bearings. These defects will be manifested by temperature variations along a horizontal line from one end of the roll to the other.

Temperature increases will also be induced through blade misalignment, improper adjustment of the rolls and from worn rolls. An ideal setting would give an almost horizontal temperature line and any variation from constancy indicates defective operations. Low temperatures are desired for other reasons. A cold paste is more viscous, possesses more tack which will cause higher shearing stresses and the vehicle breakdown will be minimized.

In spite of the many advances in mechanical construction of mills, a mill is no better than the scraper blade. Not only is the output rate measured by the thickness of the film removed by the scraper blade, but the blade must be in parallel alignment with the surface of the roll. Any attempt to use force to counteract poor alignment will cause blade bending and an increase in blade area against the roll face. The pressure will then be increased resulting in reduced dispersion efficiency.

The comparison of three-roll mills with five-roll mills is still a popular controversy. The theory behind the operation of these mills is similar except that the greater number of rolls involve more points of contact and hence more grinding action. When the rolls are brought together, a line of contact is established across the entire length of the roll. Since the rolls revolve at different rates of speed, the first roll being the slowest and each succeeding roll approximately twice as fast, a given amount of surface of one roll will slide past a greater amount of surface of the next succeeding roll. Thus a shearing action takes place and the paste between any two rolls is smeared out to a thinner film on the next succeeding roll. It is this action which breaks up the agglomerates and further

disperses the material in the vehicle.

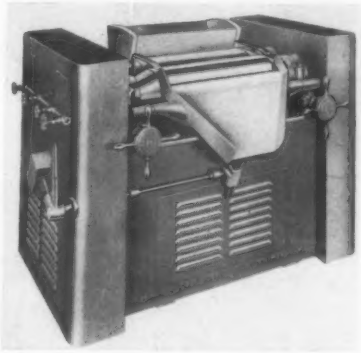
Roller mill manufacturers are continually studying the various metallurgical aspects of roll manufacturing. It is a known factor that even the best of rolls on the market does not give uniform heat transfer over the entire working surface of the roll. One of the most recent developments is a centrifugally cast dual metal roll internally machined and precision ground so that uniform heat transfer over the entire surface of the roll can be partially achieved. One of the features incorporated in such rolls is a harder surface finish so that hard abrasive pigments can be handled without fear of scoring the rolls.

Another feature recently introduced is a pneumatic discharge control. Production can be increased as much as 15% if the proper pressure is always exerted by the scraper blade on the take off roll. The pneumatic discharge control provides for the adjustment of knife pressure by means of regulated air supply to the discharge assembly. The knife pressure is regulated through a pressure reducing valve in the main air line. By coupling this feature with an indicating dial one can be assured of uniformity of blade pressure throughout the whole grinding operation and also of being able to duplicate said pressure on subsequent runs.

A small item which may seem negligible but is of monumental importance is a means of being able to control the temperature of the rolls. This has been done by installing dial thermometers in the water inlet manifolds and in the rolls at each water outlet. Thus one is able to control the relative temperature of each roll and achieve an ideal roll setting. It has to be pointed out that after the mill is in operation for a certain period of time, due to forces created by shear and speed, the temperature of the rolls is caused to increase thus changing the curvature of the roll surface. At this point it then becomes necessary to make necessary adjustments so that the maximum output be achieved for any given setting. These adjustments are not only concerned with the resetting of the rolls by means of the fly wheels but by changing the water supply so that the temperature of the rolls be decreased to the given value. It has been noticed many times that but a few degree variation in the water temperature may cause a production variation of up to 35%.

One point adjustment three roller mill

One of the more recent innovations are mechanical attachments to the rolls with visual indicators of pressure balance. Although these devices are a tremendous step forward they are not a mill setting device but a means of checking and controlling mill set. In other words the operator can notice at once if during the course of operation his set has changed just by observing the dials on the machine. The original set is still a skilled manual operation. The manufacturer also claims that by using this device duplication of settings can be achieved. We therefore, have an excellent instrument control which may lead in the not too distant future to a fully automatic and fool-proof operation.

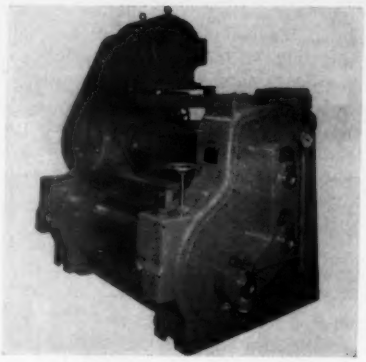


Three roller mill with dual adjusted regulator

At this point it becomes necessary to remind the mill operator that the degree of efficiency in his premix is a governing factor in the degree of relative dispersion that will be encountered on the grinding action of the roller mill.

Consistency is also very important and contrary to many belief one cannot establish a set of viscosity limits for any give type roll mill. One has to formulate selectively and specifically for any one type mill in order to obtain maximum efficiency. Records should be kept of optimum production rates at any given paste viscosity so that a happy compromise can be reached.

What can be expected in way of production? Talking in terms of high speed modern three roll mills which incorporate all of the features discussed above, one can expect the following provided his formula has been adjusted for maximum grinding efficiency: Whites can be ground at the rate of 150-250 gallons per hour depending upon the nature of the pigments used. Soft colors as for example chrome yellows



Vertical type three roller mill

can be produced at the rate of 35-60 gallons per hour. Reds and blacks are in the neighborhood of the yellows maybe 10-15% less. Iron blue, maroons, earth colors will give us 25-30 gallons per hour.

Uniroll

Recent innovations made in this particular mill has helped considerably in increasing its production efficiency and capacity. First of all the vain bar which is one of the controlling grinding units is constructed with four different angle sizes, mainly 5, 10, 15, 20 degrees. There seems to be varied information and ideas as to which is the optimum bar to use for any given set of conditions, and it was finally decided that a trial and error proposition was the method which gave satisfactory results.

Also due to the oscillation of the roll in an horizontal plane, there occurs a leakage of unground material at the ends of the roll so that an unsatisfactory condition will be encountered if any of this course material is incorporated in the batch. To eliminate the vain bar selectivity a single universal vain bar was devised which is free riding on the roll and is self adjusting so that a proper angle of attack is present under all conditions.

To eliminate the leakage at the ends, most of the oscillation was eliminated from the roll, the machine was speeded up considerably and specially designed pressed phenolic end seals were installed. The result of these innovations was quite evident. The leakage was eliminated and with the introduction of the new bar besides eliminating all guess work, production was increased satisfactorily by 35%.

Intensive Mixing

In this type of mixing, the mixing unit does a dual job. It combines the shearing operations which were carried out as separate procedures in the pony mixer and on the roller mill. This mixer is much like the pony mixer, with the exception that its construction and power make it capable of handling pastes of very high strength characteristics.

Dispersion in the intensive mixer

represents a series of successive paste-break operations, involving a smaller increment of pigment and a longer time for break as the loading proceeds. In order to obtain optimum shear in the paste, the loading is carried up to a maximum point dictated by the consistency of the paste as opposed to the strength of the equipment itself.

In the intensive mixing operation, the pigment concentration at which the dispersion will be obtained may be varied between 77-80%. A vehicle viscosity of about Z-2 or higher is indicated for efficient operation. It has been found that the structure, tack, and viscosity of the vehicle have a definite influence on the efficiency of the intensive mixer method of dispersion.

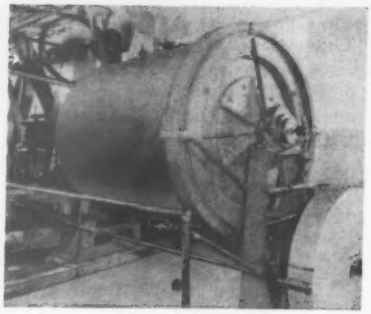
Pebble and Ball Mills

The dispersion of pigments by pebble milling consists of an initial wetting of the pigment followed by a ball and then a break condition. However, in direct contrast to other types of dispersion methods, pebble milling is based on developing ideal mobility of the grinding charge in a minimum amount of time.

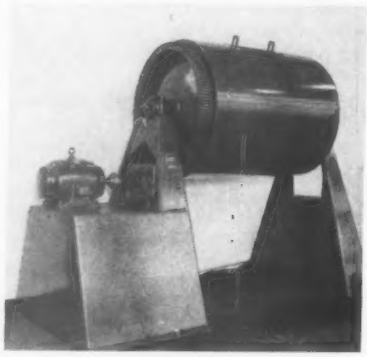
Of all the equipment available for pigment dispersion, ball and pebble mills are probably the most widely used. These mills are essentially cylindrical chambers mounted horizontally, which are partially filled with pebbles, porcelain or steel balls together with the required grinding mixture. The cylinder rotates causing the balls to be lifted to the point where they cascade, rolling over each other, crushing any particles caught between contacting balls, and subjecting the mixture to a highly turbulent mixing action in the spaces between the balls.

Ball mills differ from roller mills and paste mixers in that they do not disperse pigments by shear alone. It is the impact of ball against ball and the shear action of balls sliding across one another which combine to accomplish the desired dispersion. The zone of action occurs where the balls cascade from the upper periphery of the mill to the bottom of the mill. Most of the factors affecting mill operation is concerned with maintaining the effectiveness of this cascade.

Considering the widespread use of ball mills in the paint industry, it might surprise some to learn that the modern ball and pebble mill are relatively newcomers to the paint making family, arriving after World War I. Cylindrical mills were employed for the grinding of ores, Portland cement and ceramic products long before they were adopted for pigment dispersion. The early mills were not suitable for this purpose because of mechanical and structural defects. In particular, excessive wear both of the shell of the mill and the balls, together with a high incidence of broken balls, were serious obstacles.



All steel jacketed ball mill



High pedestal ball mill

Batch type pebble or ball mill

Today pebble mills are specially constructed for paint making with non-ferrous linings of buhrstone, silex or porcelain and with grinding media of selected flint pebbles or variously shaped porcelain balls. Ball mills are made with steel or steel alloy shells with various linings using balls of cast iron or alloy steel.

Ball mills possess several advantages over other mills: volatile solvents are retained by the closed drum; it is unnecessary to pre-mix the various components, operation may be continued for extended periods without supervision and both maintenance and operating costs are relatively low. The main disadvantage lies in contamination due to abrasion. The fact that certain difficult grinds cannot be accomplished with the ball mill is not necessarily a defect. As a processing tool, it should be used only for dispersions best suited for the equipment.

Because of the obvious advantages of the ball and pebble mills, many procedures have been devised to determine the proper grinding consistency and best pigment concentration for obtaining the desired consistency. On the basis of several simple laboratory experiments, it is possible to empirically determine the optimum formulations for a select group of dispersions. For experimental details, the reader is referred to Circulars 744 and 745 of the Scientific Section of the National Paint, Varnish and Lacquer Association and to the work of the Technical Committee of the New York Paint and Varnish Production Club.

Variables

The variables in ball and pebble mill operation are still too complex to justify generalizations. It is possible to list the conditions that contribute to efficient operation. The fact that the variables can be itemized and experimentally measured is probably responsible for the amount of work that has been carried out on ball mill operations.

It may be anticipated that for several specific systems, suitable empirical equations and nomographs may appear in the near future. Because of the wide variety and varying character of the pigments and vehicles used, a general correlation should not be expected.

The variables involved in ball mill grinding are listed by Fischer (3) with excellent clarity:

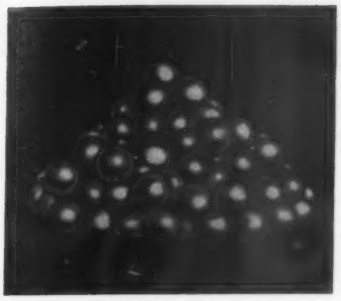
MILL SPEED: 50 to 65 percent of the critical centrifuging speed. The actual speed for any given condition of mill operation should be adjusted to obtain cascading of the ball charge.

BALL LOAD: 40 to 55 percent of total mill volume. Higher loads reduce the cascading, giving in effect a choked mill. Lower loads may contribute to slipping of the ball charge with excessive wear and deformation of the grinding media.

DISPERSION VOLUME: 18 to 20 percent of mill volume. A charge that is slightly in excess of that which fills the ball voids is most rapidly dispersed. For plant operation this may not be the most economical overall charge. However, since power rates, labor costs, production cycles and other factors need to be considered.

BALL SIZE: smallest practicable in view of feed size, viscosity of the dispersion and mechanical arrangements for straining at the discharge port. Mixed ball sizes in cylindrical mills have little or no advantage. A few large balls, however, sometimes assist in

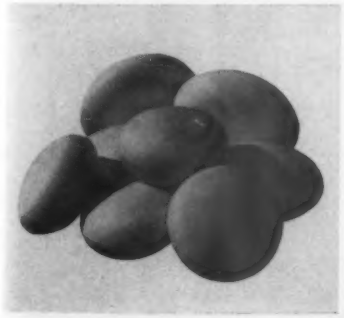
Porcelain balls



Steel balls

Flint pebbles

Tubular-shaped grinding media



Flattened sphere shaped grinding media

maintaining maximum ball mobility.

VISCOSITY: highest consistent with maximum ball mobility and free cascading of the ball charge. Particular attention should be given to the different viscosity levels for laboratory- and production-size mills. Optimum dispersion rates in a small mill will be obtained with lower viscosity compositions than those used in a large mill. Consequently, formulas developed in the laboratory require adjustment before they can be used in plant operation. Usually it is possible to withhold some of the thinner from the plant-size batch, thus providing a more viscous grind.

YIELD VALUE: at the minimum. In many cases it is possible to reduce yield value by withholding those components of the vehicle that induce flocculation or, alternatively, by adding appropriate surface-active agents.

BALL CONDITION: spherical. Slipping and cataracting of the ball charge produce deformed balls and excessive contamination.

Grinding Media

The main types of grinding media employed in pebble mills are porcelain balls, flint pebbles, steel balls and various steel-alloy balls.

The type that the manufacturer will use is dependent on what type of ball milling equipment he uses and type of product he is manufacturing. Generally speaking, porcelain balls should be made from the highest-grade materials, flint pebbles must be free from cavities and regular in shape, and hardened-steel balls are always used with steel or cast iron linings.

Within the last two years, grinding media of shapes other than the conventional, spherical type were being offered to the paint industry.

One firm is offering cylindrical media, and another firm media with shape of a flattened sphere.

It is claimed by the manufacturer that cylindrical shape grinding media promotes better and faster grinding because this shape provides more contact area. This type of media is essentially aluminum oxide of high specific gravity (3.66) of about 13/16 in length. This small size was selected after lengthy test as the most effective for both large and small capacity mills.

The flattened sphere type of grinding media is said to increase as much as 40% the dispersion rate of paint pigments in pebble mills. According to the manufacturer, the flatter angle permits faster dispersion because it provides a combination of rubbing action and impact over a greater surface contact area. This media is made of a special high-density alumina ceramic material with a specific gravity of 3.40.

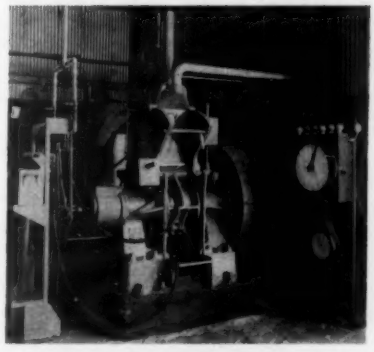
For best results in the use of the flattened sphere grinding media, the following suggestions are offered by the manufacturer:

(1) The formulation of the batch should be adjusted either by increasing the pigment concentration in the paste, or by increasing the amount of paste in batch to give these heavier media something to work against. The viscosity of the batch material should be not less than 100 KU to 105KU for formulations that have a density or weight of about 15 pounds per gallon.

(2) The mill charge using this type of media should occupy at least 50-50% of the total mill volume.

Heavy Duty Dough Mixers

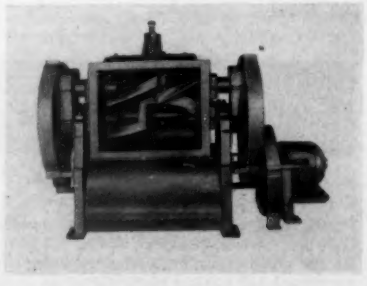
As the name implies, dough mixers are heavy duty kneading machines originally developed for the baking industry for mixing dough. It has been adopted by the paint industry for processing heavy pastes and stock dispersions. Various refinements were imparted to the basic design which now include heating jackets, tight covers, tilting mechanisms and different arm



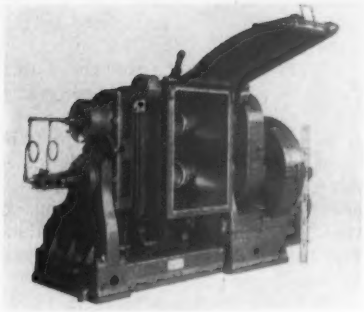
Banbury mixer

designs. In common with the other mixing and dispersion operations, the variables for high-viscosity dispersion are unknown. Furthermore, no study of the process variables has ever been reported. Whatever has been written about this subject is entirely descriptive.

A dough mixer consists of a trough in which two blades or arms rotate in opposite directions. The direction of



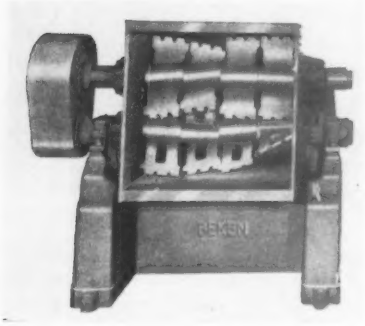
Double blade kneader



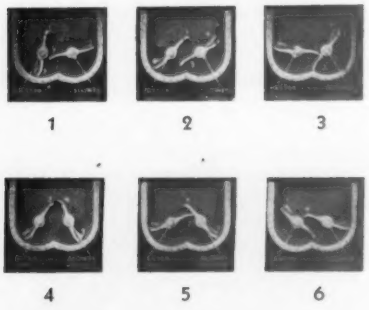
Heavy duty dispersion-type mixer

rotation is such that the material in the mixer is drawn into the center of the trough and down between the blades. The blades normally operate at different speeds. Dispersion of the pigment is attained through pure shear in the body of the paste. The important thing is to get the paste just as heavy and tough as possible. If the pigment concentration is too high, the paste will crumble; if too much vehicle is used, the paste will be soft and the high shear force will not be developed. For this reason, this class of equipment favors the use of high viscosity vehicles.

Duplex mixer



Paddle positions for complete rotation cycle



Principle of operation: The faster paddles (left blades) travel at twice the speed of the slower paddles (right blade). Illustrations numbered 1-6 cover a complete cycle of rotation. As the faster blades overtake the slower blades, they compress and squeeze the mix, providing a mixing-dispersion action.

The advantages lie in the rapid dispersion attainable and in the majority of the cases, better dispersions. The disadvantages are high initial cost, size of equipment, the inability to handle certain hard and coarse pigments and in the high power requirements.

High Speed Stone Mills

High speed stone mills are of recent vintage in the paint industry but have found wide acceptance in a very short time. One cannot conceive of an up-to-date plant without a battery of high speed stone mills.

These machines are rather small in size and therefore require a minimum of floor space; the average installation occupies an area of about four square feet.

The grinding surface consists of two carborundum stones of about one foot diameter with the top stone stationary and the bottom stone rotating in the vicinity of 3000-4000 r.p.m.

The material to be ground flows by gravity from a conical shaped hopper, mounted on top of the mill, into the so called "eye" of the mill and falls on a small brass impeller which is mounted on the end of the drive shaft for the bottom stone. The action of the impeller is a very important one. It further carries on the mixing operation and it distributes the material to be ground evenly on the stone surfaces.

The grinding action is carried out by the rotating action of the stones and by tremendous shearing stresses in the intermediate layer of liquid which acts as the carrier for the pigment portion of the paint. These stresses have a tendency to disperse the particles suspended in the liquid.

All of these mills are water cooled so that the material being processed can be maintained at a safe temperature.

Setting is rather simple and is done by means of a worm gear that acts as an elevating medium for the stones: thus the clearance between the stones can be readily adjusted and measured.

The nature of the premix is of great importance. For ease of operation and for maximum production at the best possible grind rating it is suggested that the viscosity of the material to be ground be kept in the neighborhood of 50-65 Krebs units. The rate of output is large as compared with other types of grinding equipment. For materials where the fineness of grind is not too critical, one can expect an output of 250-350 gallons of paste per hour. Where a finer grind is desired the above figures will be reduced from 30-40%.

The ideal products to be manufactured with the aid of this type grinding equipment are flats, primers, house paints, barn and roof paints, mill end paints, structural maintainance paints

High speed stone mill

and other material of this type where fineness of grind is not of critical importance.

It is suggested that for all normal types of operation the power be supplied by a 15 h.p. motor. It is further suggested that due to the speed of the machine and the resulting large output, the ground material be discharged directly into the conical hopper of a 3 h.p. pump so that transfer and handling can be reduced to a minimum.

The advantage of mills of this type is low initial cost, small space requirements, relative ease of operation and high output rates. Its disadvantages lie in the limited products processed and in the fact that fine dispersions cannot be attained. The colloid mills find their greatest outlet in emulsification processes.

Conclusions

One could treat the other unit operations in very much greater detail, but it would serve no useful purpose. Paint manufacturing is essentially a mixing and dispersion industry. Only to a lesser degree is it a resin and varnish manufacturer. And as such the operations of heat transfer, filtration and fluid flow are of interest. Because the latter three operations are common to all the chemical industries, they have been studied in great detail.

Dispersion slurry-type mixer

It is true that engineering research is expensive, time consuming and difficult, but the results are quite far-reaching. The paint industry has an excellent program in supporting raw material and physical testing research and the value is considerable. It would not be difficult to extend this policy to engineering process development.

The costs would not be borne exclusively by the paint manufacturer because other batch industries would have equal stakes in such developments. The equipment manufacturers would be willing to participate cooperatively and the universities would be more than willing to supply brain power and physical facilities.

The industry is now sufficiently mature to accord the chemical engineering profession the recognition it deserves.

Equipment Available

The following firms manufacture various types of mixing, blending, grinding, and dispersion equipment specifically for use in paint production. Every attempt was made to make this summary as complete as possible, and if omissions have occurred they were through no failure of effort on our part. Claims made concerning the equipment listed are strictly those of the manufacturers and do not represent editorial endorsement.

Abbe' Engineering

Complete line of Jar Mills, Barrel Rolling Machine, Drum Tumbling Machine, Pebble and Ball Mills, and Grinding Media.

Abbe' Dispersal Mixer — This mixer does two things: (1) It thoroughly breaks up agglomerates of solids and liquid globules. (2) It mixes and emulsifies at a high rate of speed and with great thoroughness. The basic principles embodied in this mixer involves two functions. One is the milling element, which breaks up globules and agglomerations as it mixes ingredients with great intensity. The other is the circulating element which feeds the mix downward into the milling element while it contributes its parts to the blending and mixing process. The milling and circulating elements are each provided in two designs which are used in accordance with the nature of the mix. These mixers can be supplied in jacketed form to provide for heating and/or cooling; also can be provided to operate at any required pressure or vacuum.

Baker Perkins Inc.

Dispersion Mixers — These are designed for handling batches of rubber, paint, enamel, ink, and plastics. The blade or rotor in this dispersion machine has been designed to give maximum hydraulic shear with temperature control within the safe limits of the material being mixed. The mechanical action of this machine is such to thoroughly move each pigment particle contained in these plastic masses. According to the manufacturer, not only a complete dispersion can be accomplished, but dilution can be made in a single batch operation.

Pneumatic or manually operated compression covers are available on these mixers if it is necessary to mix within the blade area. Efficient temperature control can be obtained with specially designed trough and trough-end jacketing, as well as with cored blades.

Bowser, Inc.

Automatic system is able to handle many types of liquids. It is especially adaptable in the paint industry for blending drying oils, solvents, and other additives. It is reported that this unit saves labor, time, prevents waste from spillage, reduces accidents, minimizes fire hazards and eliminates guesswork in mixing liquid ingredients.

Bramley Machinery Corp.

Beken Duplex Mixer — Disperser Kneader. This type of mixer is said to make mixing, dispersion and wetting possible in one operation. It provides the necessary "shear" required to disperse the most minute agglomerates, and no portion of the batch can escape treatment. In this particular mixer, the mixing paddles deeply intermesh and revolve at differential speeds. On the two horizontal shafts are mounted a series of paddles, usually four on each. The paddles on each shaft so deeply intermesh that the tips of one set just clear the hubs of the opposing set, the front set revolving at twice the speed of the rear set. The front paddles, in overtaking the slower paddles, squeezes a mass of material between opposing surfaces, but the metal surfaces never come into close contact.

The idea of this mixer is to develop a heavy consistency dough or paste within thirty minutes or maximum one hour using ample power to do so. The final operation is the dilution of the batch in the same mixer within a minimum of time and reduced power or do the final thinning down in an ordinary portable mixing tank.

Charles Ross & Son Co.

High Speed Three-Roller Mill — For grinding printing inks, paints, enamels, lacquers, etc. The rolls are chamber bored for full-length water cooling and temperature control. The cooling of the rolls is regulated by separate valves for each roll which, once set, can be turned on or off in unison by the main valve. The apron is a specially designed balanced type of lighter weight, which according to the manufacturer, provides uniform pressure of the razor knife along the full face of the roll and eliminates scoring of roll ends.

The adjustment of the mill is facilitated by adjusting handwheels, each equipped with ball thrust bearings and calibrated indicating dials for accurate adjustment of rolls.

Line of heavy duty paste mixer, semi-paste mixers, change can mixer, laboratory change can mixer, change tank mixer, kneaders, liquid mixers, dry mixer, and horizontal mixers.

Coors Porcelain Co.

Grinding Media

Entoleter

Centrifugal Machine designed for mixing and blending. The manufacturer recommends 5 H.P. Mixer for dispersion of oxide colors and pigments and 7½ H.P. unit for color extension and dispersion of all ingredients in water paints.

Epworth Manufacturing Co.

Line of balls mills of various sizes; water jacketed types are also available; single barrel and multiple barrel types are also offered. Line of mixing and agitating equipment, post mixers, mixing and storage tanks, and transfer tanks.

Farrel-Birmingham Co., Inc.

Banbury Mixers — The design of the Banbury Mixer embodies an enclosed mixing chamber, double-cylindrical in form. In each of the cylindrical sections is a hollow rotor, roughly pear shaped in cross section and formed in an interrupted spiral longitudinally. In revolving, each rotor provides surfaces that converge acutely with the walls of the chamber.

The two rotors revolve in opposite directions, the spiral construction, combined with a speed differential, producing a constant circulation of stock. The ridge at the bottom of the chamber, where the two cylindrical chamber sections meet, helps force intermixing.

Mixes of pigments with nitrocellulose, synthetic resins (in either gum or solution form), and other vehicles, such as varnishes, oils, etc., can be produced in a Banbury in 6 to 20 minutes. With this type of a mixer the ratio of vehicle to pigment may be 12 to 88 percent for good dispersion. According to the manufacturer, color and gloss of paints produced with a Banbury mixer are good.

Herman Hockmeyer & Company

Post Agitator is a heavy duty liquid mixer featuring hydraulic lifting and variable speed, complete 360 degree swing to permit grouping of change cans and the saving of time in production; has adjustabie mixing blades to fully fit various can diameters and give greater mixing efficiency and permit the usage of all cans — large and small.

Heavy Duty Paste Mixer.

J. H. Day Co.

Three Roll Mill for dispersions of all types of printing inks, paints, enamels, lacquers, and colors in varnishes.

Dispersion Mixer — for heavy duty kneading and mixing. Counter-rotating agitators with 3 to 2 ratio for thorough mixing action.

Line of Pony Mixers.

Kent Machine Works, Inc.

Five Roller Mill — This mill, according to the manufacturer, features an entirely new departure in roller setting, which requires only four hand wheels instead of eight. Also, quick release lever for ease in cleaning and duplicate setting is another feature of this unit.

High Speed Three Roller Mills features quick release, provisions for cooling and adjusting pressure on rolls.

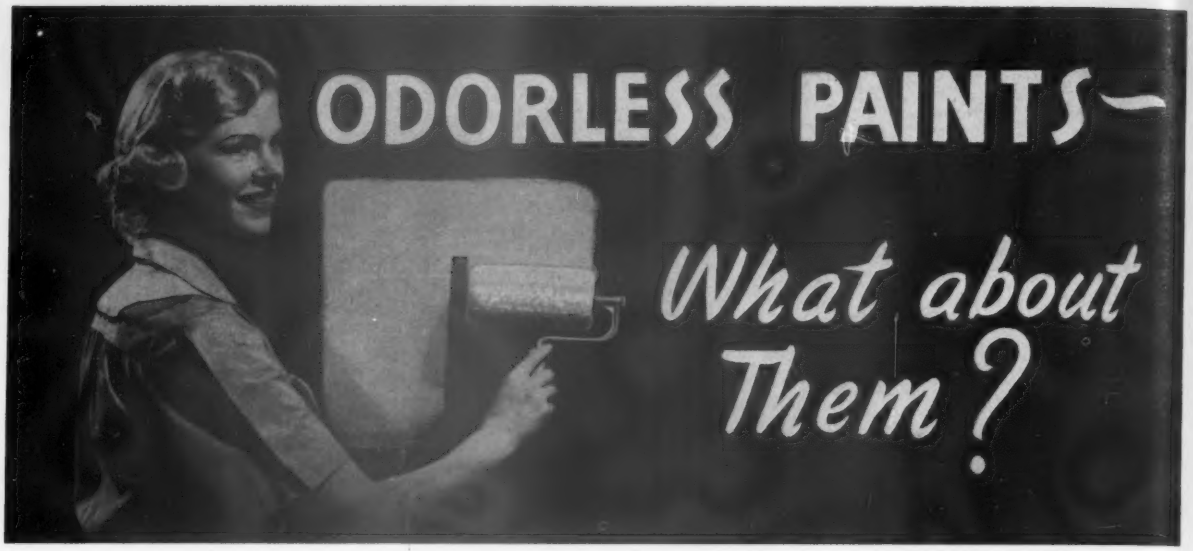
Line of mixers of various sizes.

Kinetic Dispersion Corp.

The Kinetic Dispersion Mill depends on high speed acceleration of pigment agglomerates in the fluid carrier. Kinetic energy which is imparted to those agglomerates is instantly converted at the point of highest speed, to work energy by violent change in direction of the agglomerate motion. At the point of direction change, the agglomerate mass is impacted with terrific force against the fixed or stator member of the dispersion head. The extreme hydraulic turbulence caused by pressure drop and velocity increase in the stator frame further disperses the broken agglomerates into the carrying fluid. This process is repeated thousands of times.

This mill works very well, according to the manufacturer, in mixtures containing the maximum of solvents and only sufficient vehicle necessary to break thixotropy in high pigment loadings. No premixing is necessary.

(Turn to Page 90)



By FRED S. BYERLY
Manager Resin Technical Sales
U. S. Industrial Chemicals Co.

PAINTS and varnishes have always had characteristic odor and the consumer, being aware of this, apparently came to accept the smell of freshly applied paint as part of the deal. Paint technicians know, but the layman may not, that there are two sources of odor in a paint or varnish; namely (1) the volatile solvent portion which evaporates, and (2) the non volatile or solids portion which becomes the permanent film. It is essential that these two sources are considered when discussing the comparative odors of paints or varnishes.

During the past few years and particularly this year, the subject of paint odor has been one of the main topics of discussion among paint producers due, in a large measure perhaps, to the new and highly advertised latex paints. One of the strongest points of appeal to the public by producers of these latex paints has been by such phrases as "no painty odor" or similar terms. However, before the advent of latex paints, there were conventional wall paints on the market being advertised as "odorless". The word "odorless" is defined in the dictionary as "free from odor" or, in other words, total lack of any smell. Careless use of catch phrases and loose application of an exact adjective like "odorless" in presenting these paint products to the public has led to a considerable amount of confusion in the minds of the consumer and misinterpretation by technicians in the protective coatings industry. A current slang expression, "double talk", describes the entire matter more accurately and it is, therefore, considered timely to discuss the various types of paints and to establish the degree to which they qualify under the literal definition of "odorless".

Reducing Odors

WE will take the case of conventional type paints prior to a discussion of water thinned types. The first major step in reducing odor was in the solvent portion with the replacement of turpentine by petroleum solvent such as mineral spirits — a result of the automobile age and largely accomplished in the decade following the first world war. This change, however, was motivated more by economy than by desire to eliminate odor.

During the nineteen thirties, the attempts to improve odor centered around the use of "masking" agents.[1] There were literally hundreds of these perfumes on the market, but perhaps the most widely used one was "Vanillin". An indication that the paint industry was beginning to concern itself with the odor factor as early as 1935 is found in the *National Paint, Varnish and Lacquer Association Circular #496, 388-9*, entitled "A Method of Comparing the Odor of Drying Paints".[2] However, the masking method did not achieve any permanent success because more often the cure was worse than the disease.

With the development of deodorized kerosene for insecticide sprays, attempts were made to utilize this solvent in odorless paints. A patent was issued January 17, 1939,[3] covering the use of deodorized ker-

osene with natural resins to "form a paint which is substantially odorless". There was also a Canadian patent,[4] issued in 1945, based on deodorized hydrocarbon solvent and an odorless synthetic resin in an odorless vegetable oil. However, the odor of the oil, per se, is unimportant since it is the emanation of oxidation by-products during the drying of the oil film that contribute the offensive odor. This type of solvent met with very little success — even though it was practically odorless — because the treatment with sulphuric acid to which the kerosene was subjected to remove odor bodies also reduced the solvency strength to such a great degree as to make it impractical, particularly with synthetic resins.

Nothing further was accomplished on odor reduction until after World War II and, again, it was the solvent that effected the improvement. The introduction of odorless mineral spirits came as a result of the high octane aviation gasoline production of which they were a higher boiling fraction. This type of odorless solvent meets the strict literal definition, since it is completely lacking in any scent. Some petroleum chemists have, ascribed the fundamental chemical cause of odor to any polar or polarizable substances contained in the aliphatic hydrocarbon.[5]

According to petroleum technicians, there are three ways in which odor free solvent may be produced:

1. By removing odor bodies with sulphuric acid treatment. This type of solvent has been previously referred to in this article.

2. By sulphur dioxide extraction of the aromatics. This process is more common to the West coast because of the characteristics of the crude petroleum common to that area.

3. By converting isoparaffins to aromatics through alkylation and redistillation of the residue to obtain the desired boiling range.

It is understood that the employment of the alkylation process in

FRED S. BYERLY

the production of aviation gasoline makes it possible to obtain completely odorless higher boiling fractions suitable for use in the paint industry.

Although described as "odorless mineral spirits", it should be pointed out that they do not correspond to regular mineral spirits in physical constants. A typical comparison is shown below in Table I.

It will be noted that the solvent power is lower than that of the regular mineral spirits, but is still high enough to use with some alkyd flat vehicles. Generally, the only visual effect to be noted in swinging over from regular to odorless will be a few Krebs Units increase in consistency, which means that the final paint will be adjusted to a slightly lower percentage non volatile. However, technicians are cautioned to make reduction tests of the alkyd vehicle with odorless mineral spirits to an extreme such as 10% solids to determine whether there is any tendency for the resin to throw-out of solution. Some alkyd flat vehicles are over polymerized in order to achieve non-penetration and, therefore, are prone to insolubility in odorless solvent when reduced to below 20% solids. Due to the higher distillation range of the odorless type, the evaporation rate more closely approximates high flash mineral spirits than the regular mineral spirits.

Table I

	Lbs. Per Gal.	Flash Tag Cl. C.	In. B.P.	End Point	K.B. No.	An. Cl. Point
REGULAR M.S.	6.5	103°F	310°F	376°F	37 cc	130°F
ODORLESS M.S.	6.3	124°F	344°F	388°F	26 cc	186°F

Some of the work by petroleum chemists, leading to the production of present odorless aliphatics, was motivated by the demand for this type of product in the dry-cleaning industry[5] — secondary in volume importance in the paint industry. Taking advantage of the limited availability of these solvents, flat wall paints were advertised as "odorless paints" when introduced on the market in 1947. The vehicle non-volatiles used in these paints were oleoresinous and, therefore, the resultant film of paint after application emitted characteristic by-product odors of oxidizing oil. Hence, these paints were not truly odorless, but were only relatively so, compared to paints made with regular mineral spirits.

It was not until 1949 that any real progress was made toward an odorless flat paint vehicle non-volatile. It was generally known that alkyd films were very mild in drying odor as compared to oleoresinous varnishes or oils, but this type of resin was not readily adaptable to flat paints due to characteristic hard brushing and tendency to penetrate. The first pure alkyds* specifically designed for use as the sole vehicle in flat wall finishes,[6] were also the first to be marketed in the odorless mineral spirits.[7] By utilizing this type of resin in odorless mineral spirits as the flat paint vehicle, it is possible to produce a wall paint that is relatively odorless in the package and free from the pungent film odors associated with the oxidation by-products of drying oils. Thus it can be said that alkyd type flat paints, while not completely odlrless, may be considered as such for all practical purposes.

(*Turn to page 89*)

*"Aroflat" alkyds, according to U.S.I. Chemical News, Oct. 1949, were the first, flat wall vehicles offered to the paint industry in odorless solvent.

Booth No.

PAUL O. ABBE, INC. 14
Little Falls, N. J.

Ball and Pebble Mills Displays

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ADVANCE SOLVENTS & CHEMICAL CORPORATION 99-100
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New York 16, N. Y.

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C. Lechner J. Ottens

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9611 East Marginal Way
Seattle, Wash.

Self Cleaning Strainer, Filling and Closing Machine

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T. Dunn P. Zenlea

AMERICAN CYANAMID COMPANY 61-62
30 Rockefeller Plaza
New York 20, N. Y.

Complete Resin Line

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Trussell	Dutt	Stickle
Garland	Bradshaw	Patrick
Morris	Norris	Murray
Hensley	Kirsch	Johnson
Oliver	Dubbs	Lambert
Verdery	Brude	West
Harris	Cordon	Wennergren
Miss F. Vainosky		

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ANDERSON-PRICHARD OIL CORPORATION 70
Oklahoma City, Oklahoma

Solvents, Thinners, Diluents, Asphalt and Petroleum Pitch

C. Dresser	H. Easterday	H. Compton
C. Gault	C. Allen	J. Fessler
V. Cantracco	J. Phillips	R. Johnson
E. Rooney	D. Rubek	

ANSBACHER-SIEGLE CORPORATION 26
Rosebank, Staten Island, N. Y.

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N. Eisenstein	P. Davis	H. Holtzman
J. Pisetzner	S. Stetzer	W. Tames
E. Blackstead	A. Schoen	A. LaCouture
C. Henlein		

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H. Pope	W. Platt, Jr.	G. Woodward
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L. Schrachta

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Division of Union Carbide and Carbon Corp.
New York, N. Y.

Panels and Data on Phenolic Resins, Panels on Vinyl Automotive Finish, Panels on Baked Organosol Coatings, Data on "Cocoon-Type" Coating, Display of Polystyrene Latex, Bulletin on Bakelite's Products in Government Specifications, Oil-Free Phenolic Coating for Wood, Panels and Exposure Data on Wash Primer for Steel, Galvanized Iron and Aluminum

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G. Wells	A. Joiner	J. Wynstra
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Booth No.

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BINNEY & SMITH COMPANY 66
41 East 42nd St.
New York, N. Y.
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D. Downs, J. Gotshall, L. Smith, J. Kealy, R. Keating, C. Koolk, J. Stiff, L. Venuto, M. Vogel, C. Croakman, K. Wade
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BOWSER, INC. 67
Fort Wayne 2, Indiana
Blending Meter and Equipment used in paint manufacturing
F. Kirk, W. Cartwright, F. Ehrman, J. Doelling, E. Ellestad
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BURT MACHINE COMPANY 36-37
Baltimore 2, Maryland
Labelling Machine
H. Miller, J. Whitehurst, W. Kruse, N. Reiland, S. Groudel, L. Rogers, Jr., D. Duhart

CARBIDE AND CARBON CHEMICALS CO. 97
30 East 42nd St.
New York 17, N. Y.
Solvents and Plasticizers
H. White, R. Duncan, E. Young, R. Joslin, J. Berry, D. Merry, J. Howell, D. Swartz, T. Grady
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CHISHOLM RYDER CO. OF PENNSYLVANIA 84
Hanover, Penn.
Can and Jar Labelers and Can Packers
J. Louderman, R. Louderman, K. Severson, C. Hesson, E. Abendschein

CUNO ENGINEERING CORPORATION 63
80 South Vine St.
Meriden, Conn.
Industrial Filters
H. Munday, W. Grupe, J. Duff, R. Myers
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THE J. H. DAY COMPANY, INC. 44-45
1144 Harrison Ave.
Cincinnati, Ohio
Roller Mills and Paint Mixers
A. Lockhart, E. Flowers, A. Steinman, I. Wershay, W. Bruestle, J. Diltz, R. Kelly

DIAMOND ALKALI COMPANY 43
Cleveland, Ohio
Precipitated Calcium Carbonates, Chlorinated Paraffins, Chromates
R. Craig, C. Grant, M. Walsh, K. Lewis, W. Rippetoe, W. Bates, C. Hancock

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Midland, Michigan
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EDGAR BROTHERS COMPANY 69
Metuchen, New Jersey
Extenders, Inerts, Pigments
Dr. C. Albert, A. Blake, O. Hempel, P. Wheeler, R. Dilley
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EPWORTH MANUFACTURING COMPANY 53
6587 Epworth Blvd.
Detroit 10, Michigan
Ball Mills and Paint Machinery
C. Zink, E. Jeanne, C. Leith, F. Koepke

FALK DIVISION
CARGILL, INCORPORATED 7-8
Alkyds for Flat Wall Finishes, Limed Oils and Specialty Oils
Adams, Aronoff, Bisbee, Clum, Gutkin, Kantor, Lewis, Lighter, Mattil, O'Hara, Reizenstein, Rogallner, Tropp, Weisman
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FERRO CHEMICAL CORP. 41-42
Box 349
Bedford, Ohio
Naphthenate, Tallate Octoate Drier, Vinyl Stabilizers
D. Cable, D. Juve, M. Carmody, R. O'Hara, S. Elliott

GENERAL ELECTRIC CO. 47-48
Chemical Division
Pittsfield, Mass.
Alkyd Resin Line for Fast Dry Industrial Finishes, Silicone Water Repellent, Phenolic Coating Intermediate
F. Weigand, A. Koehler, M. Bard, H. Anderson, F. Burnett, E. Winslow

THE GOODYEAR TIRE & RUBBER COMPANY, INC. 6
Chemical Division
Akron 16, Ohio
Coating Resins and Latex
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60 11th Ave. N.E.
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Transfer Pump, Heavy Duty Paintmasters
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Cleveland 6, Ohio
Cadmium Pigments, Driers and Metallic Soaps
Ahrens, Dickenson, Dure, Harris, Hintze, Juredine, Roch, Sinclair, Straka, Unkefer, Waters, Weir
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HERCULES FILTER CORPORATION 74
204 21st Ave.
Paterson, N. J.
Filtration Equipment, Filter Media, Filter Sheets
E. Brinkmeyer, H. Jones, Jr., C. Hunziker, G. Zebora, J. Gaul

HERCULES POWDER COMPANY 1
Wilmington, Delaware
Synthetic Resins, Chlorinated Rubber, CMC
Representatives from all departments
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Booth No.

HERMAN HOCKMEYER & CO. 85-86

341 Coster St.
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Heavy Duty Mixing Equipment, Paste Mixers, Agitating Tanks, Liquid Mixers, Pony Mixers, Special Process Equipment

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C. Lacey R. Beyer R. Nagel
D. Farstad D. McCready E. Smith

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Synthetic Iron Oxides, Natural Iron Oxides, Chemical Colors, Lampblack

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Booth No.

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Naphthenate Driers, Polybutenes, Anti-Skinning Agents, Lecithin Derivatives, Fumaric Acid, Phenyl-Mercuric Salts, Fungicides, Mildew-Proofers

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G. McTavey

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W. Wald W. Craig D. Marsh
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C. Kaiser K. Price T. O'Dwyer
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R-B-H DISPERSIONS, 13

Div. of Interchemical Corporation
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Midas Gold Dispersions in Metallic Finishes

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Booth No.

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148-156 Classon Ave.
Brooklyn 5, N. Y.

Laboratory Three Roller Mill, Laboratory Change Can Mixer, Display of Equipment Line Used in Paint Industry

L. Ross, C. Ross, Miss J. Patto

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SHELL CHEMICAL CORPORATION 15-16-17

50 West 50 Street
New York 20, N. Y.

Solvent Line, Epon Resins, Synthetic Glycerine, DiTertiary-Butyl Peroxide for Styrenated Alkyds

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Solvents for Nitrocellulose and Synthetics, Low Odor and Odorless Solvents

Shaffer, Myers, Turnau, Gilbert, Carnahan, Nolf, Preu, Simonsen, Sundheimer, Irwin, Kingsbury, Conn, Thomas, Day, Frew, Davis

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SPARKLER MANUFACTURING CO. 46

Mundelein, Illinois

Varnish Filter

R. Erickson, E. Anderson

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TENNESSEE EASTMAN COMPANY 21-22

Kingsport, Tennessee

Eastman Industrial Chemicals for the Paint, Varnish and Lacquer Industry

W. Gearhart, R. Miller, F. Ball, R. Moore, T. Coney

Booth No.

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TROY ENGINE & MACHINE CO. 80

Troy Bldg.
Troy, Pa.

Troy Roller Mills, Angular Mixers, Small Angular Tub Mixers

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233 Broadway
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Tall Oil

A. Doran, C. Fiscella, C. Corso

U. S. INDUSTRIAL CHEMICALS COMPANY 23

Division National Distillers Products Corp.
120 Broadway
New York 5, N. Y.

Natural and Synthetic Resins, Industrial Alcohols and Solvents

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THE U. S. STONEWARE CO. 71-72

Akron, Ohio

Mixing Equipment, Jar Mills, Ball Mills, Grinding Media

Representatives from all departments

— See Advertisement Page 12 —

UPRESSIT PRODUCTS CORPORATION 28

420 Lexington Ave.
New York 17, N. Y.

Closures

T. Shields, D. Maguire, J. Taylor, III

T. F. WASHBURN CO. 27

Chicago, Ill.

Odorless Home Decorating Line

L. Smith, M. Magee, R. FitzSimons, D. Bennett, J. Trecker, R. Bennett, R. LuBien, R. Haugen

— See Advertisement Page 9 —

C. K. WILLIAMS & CO. 87

2001 Lynch Avenue
East St. Louis, Ill.

Colors and Pigments

E. Green, I. Clare, A. Thayer, S. Richards, E. Kreopel, A. Thomsen, C. Burris, C. Love, P. Dubbeldeman, R. Hathaway, W. Inches, R. Stephens, W. Crumpler, A. Mix, R. Stuebing, T. Mawhinney

— See Advertisement Page 53 —

WITCO CHEMICAL COMPANY 54

295 Madison Ave.
New York 17, N. Y.

Paint Driers, Stearates, Color Blacks and Anti-fouling Agents

T. Starkie, H. Packer, E. Wagner, W. Pinge, J. Cunningham, R. Wendt, O. Slonek, J. Wishnick, J. Harrison

PROGRESS THROUGH COOPERATION

64th ANNUAL CONVENTION

NATIONAL PAINT, VARNISH AND LACQUER ASSN.

Officers
1952

National Paint, Varnish and Lacquer Association

BERNHARD MAUTZ
Vice-President

ROY B. ANDERSON
Treasurer

JOSEPH F. BATTLEY
President

LATHROP G. BACKSTROM
Chairman, Exec. Comm.

DAVID H. MORAN
Vice-Chairman, Exec. Comm.

PALMER HOUSE, CHICAGO
NOVEMBER, 17-18-19, 1952

Federation of Paint and Varnish Production Clubs

YE OLDE PAINT STONE 1737

Officers 1952

30TH ANNUAL MEETING

Federation of Paint and Varnish Production Clubs

G. H. WESCOTT
President-Elect

N. P. BECKWITH
Treasurer

HIRAM P. BALL
President

C. HOMER FLYNN
Executive Secretary

HOWARD SHOLL
Program Chairman

PALMER HOUSE, CHICAGO
NOVEMBER, 20-21-22, 1952

64th Annual Convention
National Paint, Varnish and Lacquer Association
November 17-18-19

MONDAY, NOVEMBER 17

2:30 P.M.

Presiding — Joseph F. Battley, President.

Call to Order, Our National Anthem — James T. Leavitt.

Invocation — Wm. M. Stuart.

Welcome to Delegates —

Canadian Paint, Varnish and Lacquer Association,

National Paint Salesmen's Association, Painting and Decorating Contractors of America,

Retail Paint & Wallpaper Distributors of America, Inc.,

American Tung Oil Association.

Presiding — Bernhard Mautz, Vice-President.

In Memoriam — Horace S. Felton, Chairman, Memorial Committee.

Report of President—Joseph F. Battley.

Report of Treasurer—Roy B. Anderson.

Preliminary Report By-Laws Committee

Preliminary Report Nominating Committee — Horace S. Felton, Chairman.

"Blueprint For Freedom" — Dr. Clarence Manion.

TUESDAY, NOVEMBER 18

9:30 A.M.

Presiding — J. A. Hager, Chairman.

INDUSTRIAL PRODUCT FINISHES SESSION

Panel Discussion of Lacquer — Dr. F. G. Weed, Chairman.

"New Uses For Lacquer."

"Nineteen Fifty-Three" — Leo M. Cherne, Executive Director, Research Institute of America.

2:30 P.M.

PUTTY AND CAULKING COMPOUND FORUM

Presiding — John N. Dicks, Chairman.

"Federal and State Specifications for Putty and Other Glazing Materials" — C. B. Forbes.

"Mixing and Filling Equipment" — H. Wesley Hibbert.

"Promoting Sales Through Better Merchandising" — J. N. Dicks.

"Common Glazing Problems" — Ronald Brown.

12:30 p.m. — **Luncheon for Industrial Products Finishes Manufacturers.**

TRADE SALES SESSION

Presiding — Wilbur L. Rice, Chairman.

"Helping Distributors Merchandise Products" — A. P. Barberi, NYPV&LA.

"Where Can the Industry Go With Color" — Frank Connolly, Chairman, Color Promotion Sub-committee.

"Meeting Competition of Materials Claimed to be Replacements" — William E. Hood.

"The 'Do-It-Yourself' Market for Paint Products" — Bernhard Mautz.

"Water — Hidden Menace, and Association's Program" — Robert J. Smith.

"How Can Industry Expand the 'Cleanup-Paint up-Fixup' Program— Walter G. Sibley.

ROOF COATING FORUM

Presiding — H. R. Allison, Chairman.

"Promote Sales Through Better Merchandizing" — H. R. Allison.

"Federal and State Specifications for Roof Coatings"

"Common Problems and Their Correction" — D. G. Marler.

"Supporting 'Water-Hidden Menace' Program"

ANNUAL MEETING WHOLESALE-DISTRIBUTORS DIV.

"Services by Wholesalers" — James Reardon.

Panel Discussions Dealing with Merchandising, Sales Training and Services.

WEDNESDAY, NOVEMBER 19

9:30 A.M.

Presiding — Ernest T. Trigg.

Final Report By-Laws Committee.

CONSIDERATION OF COMMITTEE REPORTS AND RESOLUTIONS

Introduction of Guest Speakers — Joseph F. Battley, President.

THE FEDERATION OF PAINT AND VARNISH PRODUCTION CLUBS

"Federation Activities" — Hiram P. Ball, President.

"Color Aptitude Test" — C. Homer Flynn, Executive Secretary.

"Controls for Defense" — Ralph S. Trigg.

Final Report Nominating Committee — Wm. H. Jarden, Jr., Chairman.

Election and Installation — Officers and Members of Executive Committee.

Unfinished Business.

New Business.

Adjournment.

SOCIAL EVENTS

MONDAY, NOVEMBER 17

6:00 p.m. **Reception for Ladies and Men.**

TUESDAY, NOVEMBER 18

12:30 p.m. **Men's Luncheon.**

WEDNESDAY, NOVEMBER 19

12:30 p.m. **Men's Luncheon.**

30th Annual Convention
Federation of
Paint and Varnish
Production Clubs

WEDNESDAY, NOVEMBER 19

1:00 P.M. **Registration**

2:00 P.M. **Council Meeting.**

6:00 P.M. **Council Dinner**

THURSDAY, NOVEMBER 20

8:00 A.M. **Registration**

9:30 A.M. **Paint Industries' Show Opens.**

10:15 A.M. **Greetings** — H. P. Ball, President.

Introduction of Committee Chairman

Welcome — C. J. Overmyer, Meeting Committee Chairman.

H. H. Zimmerman, Host Committee Chairman.

E. H. Ott, Paint Industries' Show Committee Chairman

"Factors Affecting the Heat Thickening of Linseed Oil" — Dr. A. J. Seavell and Dr. J. J. Sleightholme, Oil and Colour Chemists' Association. Presented by L. O. Kekwick, President of the London Section of OCCA

"Instrumentation for Continuously Recording Viscosity of Resins and Polymers in Large Reactors at Processing Temperatures" — D. T. Woods, Chicago Club.

"A Study of Factors Affecting Heat Resistant Coatings" — J. E. Rench, Houston Club.

2:00 P.M. **"The Effect of Protein Dispersions on the Freeze-Thaw Stability of Latex Emulsions"** — J. B. Kenney, Northwestern Club.

"Research and Education" — Dr. J. S. Long, Devoe & Raynolds Co., Inc.

Address — J. F. Battley, President of the National Paint, Varnish and Lacquer Association.

Education and Student Session. "Paint Course Package" — M. A. Glaser.

"Paint Education on a High School Level" — Dr. J. W. Tomecko.

"Cooperation Between Industry and Education" — Dr. J. T. Rettaliata.

"Latex Paints — Moderator, M. W. Westgate, H. L. Beakes, F. J. Hahn. P. C. Herzog, P. T. Howard, D. A. Kohr, Jr., R. E. Marshall, M. H. P. Morand.

8:30 P.M. **Annual Bridge Tournament — Private Dining Room 14.**

FRIDAY, NOVEMBER 21

"A Study of Pigment Dispersion: IV" — E. K. Zimmerman, New York Club.

Report of Research Committee — P. O. Blackmore, Chairman.

Report of Evaluation Committee — W. O. Lundberg, Chairman.

"Permeability to Water of Thin Films of Pure Compounds" — B. L. Harris and A. Bialecki, of The Johns Hopkins University.

"Painting of Plaster Surfaces: I" — A. J. Wandersleben.

THE JOSEPH J. MATTIELLO LECTURE

"Unexplored Fields in Exterior Paints" — John R. MacGregor, of J. R. MacGregor Lead Co.

"The Relationship of Plant and Finished Product Warehouse Capacity" — R. W. George, New England Club.

The Color Symposium. P. O. Blackmore, Dr. D. L. Dimmick, C. E. Foss.

Annual Business Meeting.

Round Table Discussion — "Corrosion" — Moderator, G. Diehlman, T. Dembski, A. J. Liebman, F. T. Radecke, F. C. Weber, Jr.

6:30 P.M. **Annual Banquet — Installation of Officers — Awards and Entertainment.**

10:00 P.M. **Informal Dance.**

SATURDAY, NOVEMBER 22

"Comparison of Representative Latex Emulsion and Oleoresinous Flat Wall Paints" — R. L. McGill, Baltimore Club.

"Pigment Dispersion" — Moderator, H. Kelfer, A. Barkman, W. H. Hoback, C. B. Hoffman, D. E. Leever, O. F. Redd.

"Quick Specific Qualitative Tests for the Determination of Characteristic Components in Vehicles or Synthetic Resins" — G. Schutte, C. D. I. C. Club.

"Comparative Effect of Oil Acidity and Resin Acidity in Aluminum Vehicles" — C. N. Beck, Pittsburgh Club.

"Testing of Amino Resins for Stoving Finishes" — J. N. Hitchin, Birmingham Club.

"Dry Hiding Power of Paints: II" — E. J. Dunn, Jr., New York Club.

"Gadgets and Gimmicks" — Moderator, W. C. Kentner, R. G. Fortener, J. R. Kohr, E. R. Mueller, W. E. Winkler.

3:00 P.M. **Meeting Closes.**

Sorbitol Uses Discussed at Atlas Powder Co. Symposium

Some 600 heard progress reports on the use of sorbitol in various industries at a non-technical symposium sponsored by the Atlas Powder Co. of Wilmington, Del. This symposium was held at the Waldorf-Astoria Hotel on October 15th.

Among the speakers at this symposium were:

Floyd Hosking, executive vice-president of the Corn Industries Foundation who keynoted the symposium with a discussion of "Corn as a Chemical Raw Material".

Charles W. Bowden, Jr. of the Minneapolis-Honeywell Regulator Co. discussed "Quality Control of a Volume Chemical."

Panel speakers on the uses of sorbitol by six major consuming industries consisted of J. J. Alikonis, president of the American Association of Candy technologists who spoke on "Sorbitol in Confections"; Dr. D. H. Powers of Warner-Hudnut, Inc., speaking for the cosmetics industry; S. Creselius of the Naval Research Laboratories who spoke on polyhydric alcohols in alkyd resin manufacture; M. Kantrowitz of the Government Printing Office who told of the use of sorbitol in adhesives for bookbinding; Dr. R. C. Ernst, dean of the Speed Scientific School, University of Louisville on the uses made of sorbitol by the tobacco industry; and Dr. Henry R. Kreider, assistant to the scientific director of the William S. Merrell Co. discussed sorbitol in pharmaceuticals.

Sidney Kirkpatrick, vice-president of McGraw-Hill Book Co., served as chairman of the symposium.

Of interest to the paint industry was Mr. Creselius' discussion on polyhydric alcohols in alkyds.

He outlined the common alcohols used today in alkyds namely glycerine, pentaerythritol, ethylene glycol, sorbitol, and mannitol, and said,

"In a series of resins we have recently prepared in which one half equivalent sorbitol and one half equivalent glycerine were used with various fatty acids ranging from 28% phthalic anhydride content, it was found that this product gave a color quite comparable to those products made with straight glycerine, and polymerization reactivity during processing fell somewhere between glycerine and pentaerythritol. The old difficulties of dark color and slow esterification rate seemed to have been eliminated. Due to the current interest shown by the Navy in vinyl resins, we have been engaged in making a study as to what portion of composition effects most significantly the co-use of an alkyd with vinyl-type resins. We are doing this by making uniform variations in phthalic content type of fatty acids and type of polyhydric alcohol. One of the things we are finding in these vinyl alkyd compositions is that in products where other materials are constant, resins containing pentaerythritol and those containing sorbitol-glycerine mixtures are giving better initial performance in salt spray abinets than those made with straight clycerine (see slides). This would gndicate initially at least that sorbitol iis somewhat comparable to pentaerythritol in its superior water and chemical resistance. Its remaining disadvantage, of course, is its high equivalent weight due to inner ether formation. It is believed in the future that where sorbitol shows a definite advantage in performance it will take the place of glycerine and pentaerythritol in the manufacture of alkyds and that it will compete with them where the economics are favorable."

•

NPA Report Predicts Metal Can Shortage for Most Industries

Metal cans for products other than perishable foods are expected to be scarce until requirements for perishable foods are fully met, the Containers and Packaging Division of the National Production Authority, Department of Commerce said recently.

The forecast is contained in a 48 page *Containers and Packaging Report* which summarizes second quarter production and business activity in 28 industries of the container and packaging field. In addition, it contains an article on *Major Considerations of Industrial Palletization* and a digest of local container trends and current conditions as reported by Department of Commerce field offices in the Pacific Northwest, West Coast, Southwest, Mid-West, North-Central, South and Southesat, Middle Atlantic, New York City, and New England areas.

According to the report, the steel strike had only a comparatively minor effect on total demand and output but adversely effected metal containers when captive steel drum plants were shut down and metal can manufacturers had to consume inventories to maintain output.

Aside from metal cans, all other types of containers will be readily available for Fall demand.

M. Westgate

G. Diehlman

H. Kelfer

W. C. Kentner

4 Panel Discussions To Feature Annual Meeting of the FPVPC

Four round-table panel discussions will highlight the Annual Meeting of the Federation of Paint and Varnish Production Clubs to be held at the Palmer House in Chicago, November 20-22, according to a recent Federation announcement.

The subjects, moderators and panel members are: *Latex Paints*, arranged by Louis Ludwig and M. Van Loo, both of the Chicago Club, will be moderated by Mark Westgate, Baltimore Club, with Henry Beakes, Louisville Club; Paul T. Howard, National Bureau of Standards; Don A. Kohr, Jr., Chicago Club; R. E. Marshall, Philadelphia Club; P. C. Herzog, Cleveland Club; F. J. Hahn, New England Club, and M. H. P. Morand, Dow Chemical Company, serving as panel members.

Corrosion, will be moderated by George Diehlman, with T. A. Dempski, New England Club; A. J. Liebman, Dravo Corporation; F. T. Radecke, Shell Oil Company, and F. C. Weber, Jr., St. Louis Club, serving as panel members.

Pigment Dispersion, will be moderated by Harry Kelfer, New England Club, with A. Barkman, Chicago Club; W. H. Hoback, Calco Chemical Division; C. B. Hoffman, J. M. Lehmann, Inc.; Don Leever, Detroit Club; and O. F. Redd, Patterson Foundry & Machine Company, serving on the panel.

Gimmicks and Gadgets, will be moderated by Bill Kentner, CDIC Club; with R. G. Fortener, Jones-Dabney Division; J. R. Kohr, Lowe Brothers; E. R. Mueller, CDIC Club; and W. E. Winkler, Chicago Club, serving as panel members.

The best in cans and service

CONTINENTAL GIVES YOU BOTH!

More and more paint manufacturers are learning that it pays to take advantage of Continental's double-barreled program for pleasing its customers.

You get the best in containers. Continental's "Tripletite" paint cans provide a 50% increase in guard points against oxidation and formation of wasteful, messy paint skin. In lid and lid seat, metal touches metal at three points instead of the usual two.

You get the best in service. Our research people have a backlog of experience to advise on almost any paint packaging problem.

Isn't it time *you* got acquainted with Continental containers AND Continental service? Just give us a call!

CONTINENTAL CAN COMPANY

CONTINENTAL CAN BUILDING, 100 East 42nd Street, New York 17, N. Y.

EASTERN DIVISION
100 E. 42nd St., New York 17

CENTRAL DIVISION
135 So. La Salle St., Chicago 3

PACIFIC DIVISION
Russ Building, San Francisco 4

Reichhold Chemicals Opens New Building At San Francisco Plant

Reichhold Chemicals, Inc., held open house recently to scores of West Coast industrial users of synthetic resins, to celebrate the official opening of its new office and laboratory building at the San Francisco plant, a company report stated.

The new addition to the San Francisco plant, headquarters for the RCI's Western Division of RCI, world's largest manufacturer of synthetic resins marks the firm's third major expansion in recent weeks, the report said.

A project started about a year ago, the new building houses administrative offices covering 3200 square feet, a 2700 square foot area technical service department in which practical formulation problems of RCI customers are worked on and new products developed and an office laboratory area of 3200 square feet.

The office laboratory has been made available for an anticipated heavier load once projected facilities for producing chemical color pigments are installed, the report added.

Within the past six weeks, RCI has also increased the phenol-making capacity at its Tuscaloosa, Alabama plant and equipped its Charlotte, N. C., plant with new facilities for producing and distributing a full line of chemicals used in Textile processing.

The Charlotte plant is headquarters for the firm's central Atlantic manufacturing division and is temporary functioning as a warehousing and distribution center for surface coating materials produced by other RCI divisions.

•

Du Pont Subsidiary Firm Buys Paint Plant Near Mexico City

Du Pont S. A. de C. V., a subsidiary of E. I. du Pont de Nemours & Co., has acquired a small paint plant in Tlalnepantla, near Mexico City, from Industria Electrica de Mexico, S. A., it was announced recently.

Du Pont, S. A. de C. V. will manufacture "Duco" lacquers, "Dulux" enamels and other Du Pont finishes for industrial, automotive and household use. The plant was started by Industria Electrica to manufacture insulating varnishes to fill the company's own requirements.

Schenectady Varnish Company Reports New Plant Completed

The Schenectady Varnish Company, Inc., has announced recently the completion of its new plant in Rotterdam near Schenectady, New York.

Designed for large scale production and quality control, the new plant was constructed to meet the needs of an expanding business, the company report said.

The plant features continuous processing of finished products from basic chemicals through the use of a gravity feed and gas pressure system.

Schenectady built its new plant near its extensive development laboratories and in an emergency can use either plants as a source of supply, the report said.

Transportation requirements of the new plant are served by a private railroad siding, truck terminal and the Erie Barge Canal.

Paint And Decorating Contractors To Hold First Annual Convention

The first annual convention of the New York City Council, Inc., of the Painting and Decorating Contractors of America will be held at the Hotel Biltmore, New York City, on February 24th and 25th, 1953, according to a recent announcement by the Association of Master Painters and Decorators which sponsors the Council.

Jack W. Zucker, president of the Painting and Decorating Contractors of America, will be given a testimonial dinner on the evening of February 25th.

At the convention the national buying public will have an opportunity to see several manufacturer's exhibits in addition to an exhibit of panels by apprentice students of the New York Trade School, the announcement said.

In conjunction with the convention, a Programs and Buyer's Guide will be published and distributed to the New York Market affording manufacturers, dealers and distributors an opportunity to advertise their products.

The Council membership is composed of qualified painting and decorating contractors who have their main places of business in New York City.

•

Dr. Long Keynote Speaker At Paint And Varnish Clubs Meeting

An address by Dr. James S. Long will keynote the Research and Education theme of the 30th Annual Meeting of the Federation of Paint and Varnish Production Clubs, to be held November 20th through November 22, 1952, at the Palmer House in Chicago, Ill., according to a recent Federation bulletin.

Dr. Long was voted one of the ten outstanding scientists in paints, varnishes and plastics by the American Chemical Society and has been honored recently, by being appointed a Fellow of the Royal Society of Arts in London, the bulletin said. In addition he has been conferred the title of "Distinguished Professor" by the University of Louisville.

Dr. Long's background includes 20 years of teaching as a professor at Lehigh University, and active membership in the Federation during which time he has represented the Federation and the industry at scientific meetings here and abroad in his capacity as Chairman of the Research Subcommittee of the Educational Committee, the bulletin added.

Many present day technologists in the paint and varnish industry are graduates of the "Long School" at Lehigh, the bulletin concluded.

•

Edward G. Brown Forms Brown Chemicals Firm

Edward G. Brown announced October 1, that he had formed Brown Chemicals with headquarters at 15 Moore St., New York 4, N. Y.

The firm will engage in the manufacturing, chemical processing, importing and distributing of vegetable oils and vegetable oils specialties.

Announcing a new paint thinner
COMPLETELY ODORLESS!

SHELL SOL 72

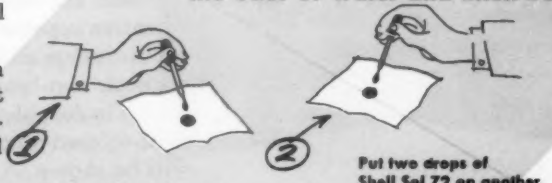
Helps overcome major complaint of paint odor . . . holds wet edge longer

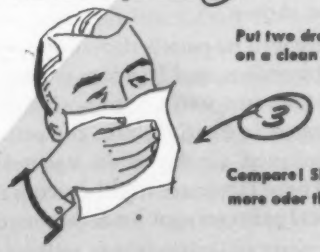
The good news among formulators today is the arrival of a new odorless thinner—Shell Sol 72. Available in full-scale production quantities now, Shell Sol 72 helps overcome one of the largest objections against interior oil paints—unpleasant paint odor.

What's more, Shell Sol 72 holds a wet edge longer . . . gives your paint smoother brushing qualities . . . reduces chances of tell-tale laps and brush marks.

MAKE THIS TEST

—see if you can distinguish between the odor of water and Shell Sol 72





TEST SAMPLE AVAILABLE

While we cannot currently meet the demand for Shell Sol 72, we want you to know about it. Drop us a note on your firm's letterhead, we will be glad to supply a one-gallon sample of Shell Sol 72 which you can test in your own laboratory.

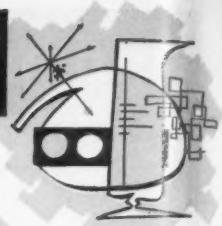
SHELL

SHELL OIL COMPANY

50 West 50th Street, New York 20, N.Y.

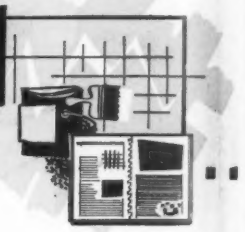
new

FORMULAS



EXPOSURE TEST RESULTS

TECHNICAL DATA



at the 1952 paint

There will be new test results to see, new information to help you, at Bakelite's exhibit.

Panels and data will present the results of extensive exposure tests. Included will be new exposure data on BR-9400; and BR-103, 100% phenolic non-heat-reactive resin for economical use in durable, water-resistant primers and dark-colored topcoats. Oil length comparisons will be shown.

There will be panels showing the high gloss, color retention, and freedom from chalking of VINYLITE resin VAGH automotive finish, exposure tested in Florida; also the results of tests on combined air-dry resin VAGH-alkyd coatings. These latter are highly recommended for chemical paint service, under severe conditions.

For your assistance there will be a new up-to-date reference bulletin of BAKELITE and VINYLITE coating resins and recommended formulations to meet latest government specifications. Typical applications displayed will be a steel cartridge-case coating for Army Ordnance specification 3-221; a tung-oil-free spar varnish for TT-V-121c; vinyl butyral metal conditioners for marine and buoy coatings.

Highlights of BAKELITE'S exhibit

industries show

Test panels will show baked VINYLITE resin organosol coatings in practically perfect condition after 14 months' exterior exposure in Florida; new performance data on "cocoon-type" coatings, and a display of polystyrene emulsion wall finishes.

A new light-colored, air-dry oil-free phenolic coating for wood, and an improved clear siding formulation based on BR-9400 will be introduced.

Panels will demonstrate the good adhesion of a new one-package wash primer type metal pre-treatment to steel, galvanized iron, and aluminum. A major feature of this pre-treatment is its package stability. Data also include a wash primer under a VAGH resin topcoat that has undergone 34 months' Florida exposure, as well as the same primer under oleoresinous topcoats.

There will be new literature covering these and many other types of coatings. And, of course, the booths will be staffed with Bakelite personnel to discuss your problems. Consult with them at the show, or write Department CJ-38 for further information.

BAKELITE BOOTHS
Nos. 2, 3, 4, and 5
1952 PAINT INDUSTRIES SHOW
Palmer House · Chicago, Illinois
November 18-22, 1952

The policy of Bakelite Company for more than 40 years is to offer thoroughly tested and evaluated products to help manufacturers open up new and profitable markets.

BAKELITE
TRADE-MARK
and
VINYLITE
TRADE-MARK
COATING RESINS

TRADE MARK

BAKELITE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
30 East 42nd Street, New York 17, N. Y.
In Canada:
Bakelite Company, (Canada) Ltd., Belleville, Ont.

Gordon D. Zuck

Gordon Zuck Announces Formation Of The Vulcan Steel Container Co.

Gordon D. Zuck, president, recently announced the organization of the Vulcan Steel Container Company, for the manufacture of steel pails in sizes from 1 to 12 gallons and the establishment of a new plant in Birmingham, Alabama.

The new plant was specially built and equipped solely for the manufacture of steel shipping containers for paint, chemical, food and petroleum products. In addition, the new firm wil also produce Hi-bake linings.

Mr. Zuck has been in the steel shipping container industry for 19 years in various capacities.

•

World Natural Rubber Production Slightly Lower Than 1951 Output

World production of natural rubber for the first eight months of 1952 was 1,157,500, nine percent under the 1,275,000 tons produced in the same period a year ago, according to estimates of the Secretariat of the International Rubber Study Group, the Rubber Division of the National Production Authority, Department of Commerce.

New rubber consumption (excluding Russian synthetic) declined from 1,552,500 tons in the first eight months of 1951 to 1,530,000 tons in the first eight months of 1952. United States consumption increased slightly from 808,114 tons to 811,505 tons, while foreign consumption, excluding China and Russia, declined from 641,500 to 614,500 tons, the NPA said.

Distributors for Edgar Brothers To Be Feted At Private Luncheon

The Edgar Brothers Company of Metuchen, New Jersey and McIntyre, Georgia, will hold a private luncheon for all their distributors attending the Federation of Paint and Varnish Production Club Convention being held at the Palmer House, Chicago, Ill., in November.

The luncheon, to take place November 20th, in a private dining room of the Palmer House, will start at noon and will be followed by a round-table discussion of problems relating to the distribution of Edgar ASP products.

The firm will also display their products at the convention.

Staff members attending the luncheon and staying at the firm's convention booth are: Dr. C. G. Albert, director of Research; A. G. Blake, vice-president; R. V. Dilley, manager of Speciality Sales; Gene Hempel, assistant manager of Speciality Sales; Peyton Wheeler of the Research Department and R. W. Wilkerson, Kenyon-Baker Account Executive handling the Edgar Brothers advertising.

•

Protective Coating Symposium To Feature NACE's 9th Meeting

A Symposium on Protective Coatings will feature the Ninth Annual Meeting of the National Association of Corrosion Engineers to be held March 16-20 in Chicago, Ill.

The men and their topics will be: *Coating and Research Application in Atomic Operations*, C. D. Watson; *Investigation of Protective Coatings for High Temperature Underground Pipelines*, C. R. Stauffer; *Nature and Theory of Flioform Corrosion*, M. Van Loo; *Effects of Composition of Steel on the Performance of Organic Coatings in Atmospheric Exposure*, F. L. LaQue and J. A. Boylan, and *Weld Seam and Weld Flux Effects on Coating Life*, A. J. Liebman.

•

TPVLA Elects New Officers

The Toledo Paint, Varnish and Lacquer Association has elected the following officers for 1952-53: President, Frank R. Pitt; Vice-President, William P. Seward, and Secretary-Treasurer, Charles H. Slauter, Jr.

Mr. Pitt is secretary of the DeVilbiss Company, Chairman of the Legislative Committee of the National Paint, Varnish and Lacquer Association and Secretary of the National Spray Painting and Finishing Equipment Association.

Mr. Seward is vice-president of the Harry C. Kirchenbauer Paint & Supply Company.

Mr. Slauter is Toledo sales representative for Pratt & Lambert, Inc.

NPA Says Paraphenylphenol Resin Supply Will Be Temporarily Scarce

Paraphenylphenol resin will be in short supply for some time after the first of the year, the Marine Paint Industry Advisory Committee was told today by the National Production Authority, Department of Commerce.

NPA officials said 40 percent of the supply now is going to the Navy for marine paint but the demand may be reduced. This would permit more resin for defense supporting industries, especially in making insulating varnishes.

The committee was told that methylene chloride for non-flammable paint removers presently is in balance. However, NPA said defense requirements for the next three months will exceed production.

NPA told members that there would be a deficit in titanium dioxide expansion goal by 1954 unless new facilities for the production of about 50,000 tons could be completed by that time.

Cobalt still is in short supply, and with the increase of jet engine production supplies for civilian use may become even more scarce.

Chromite for color production is in balance, NPA officials said, but the situation could change if military requirements should increase.

The committee reported no problems in obtaining tin containers.

A. P. Mills, of NPA's Chemical Division, presided.

These committee members attended: Thomas R. Hughes, Baltimore Copper Paint Co., Baltimore, Md.; C. W. Slocum, Devoe & Reynolds Co., Inc., Newark; George H. Miles, The Federal Paint Co., Inc., New York City; J. N. Abbott, Jr., Henderson Johnson, Inc., Gloucester, Mass.; Thos. D. Savage, Interchemical Corp., Newark; John Weber, International Paint Co., New York City; W. M. Horn, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.; Benjamin Patterson, The Patterson-Sargent Co., New York City; Robert P. Hughes, Red Hand Compositions Co., Inc., New York City; Frederick A. Walters, Socony Paint Products Co., Metuchen, N. J.

•

Brown-Allen Chemicals Appoints Calo & Company NY Sales Agent

Brown-Allen Chemicals, Inc., New York, has announced the appointment of John H. Calo & Company, 19 Rector Street, New York, as Sales Agent for their oil and chemical products in the metropolitan New York area, effective October 10.

John H. Calo & Company represent Hercules Powder, Reynolds Metal and formerly were distributors for Brown Oil & Chemical Company.

NEWS DIGEST

L. O. Kekwick

L. O. Kekwick, London OCCA Head To Attend The FPVPC's Meeting

Leslie Oliver Kekwick, president of the Oil & Colour Chemists' Association of London, England, will attend the 30th Annual Meeting of the Federation of Paint and Varnish Production Clubs at the Palmer House in Chicago, Ill., November 20 to the 22nd, according to a Federation announcement.

Mr. Kekwick, managing director of Amalgamated Oxides, Ltd., is serving his second term as President of the Association. It was chiefly through his sponsorship that the Annual Technical Trade Exhibit, the equivalent of the Paint Industries' Show, was developed by the London Section of the OCCA.

Mr. Kekwick will come to the Federation meeting on the last leg of a tour which included visits to OCCA Sections in South Africa, Australia, and New Zealand. The Association, FATIPEC (Federation of Technical Associations of the Paint, Varnish & Printing Ink Industries of Continental Europe), and the Federation form a Tri-Alliance for the exchange of technical and production information through the Federation's Liaison Committee, of which Robert W. Matlack, of Philadelphia, is Chairman.

•

Berkshire Chemicals Purchases Heavy Chemicals Distributor Firm

Berkshire Chemicals, Inc., of 420 Lexington Ave., New York, N.Y., has purchased Innis, Speiden & Co., Inc., 117 Liberty St., New York, N.Y., according to an announcement this month by Malcolm H. McAllister, Berkshire president.

NPVLA Moisture Exhibit

NPVLA Builds Exhibit Showing Effects of Moisture on Homes

The National Paint, Varnish and Lacquer Association continuing its extensive study on moisture condensation and its effect on homes, has built an exhibit display for showing at conventions, fairs and other large group meetings.

The display will be on exhibition at the Palmer House, Chicago, during the annual conventions of the National Paint, Varnish and Lacquer Association and the Federation of Paint and Varnish Production Clubs.

A panel eight feet high, ten feet wide and seven feet deep makes up the display. The word "Water" stands out in relief and simulated water effect is in constant motion. At the left side of the panel are illustrations showing actual moisture conditions found in some homes and what corrective measures were taken.

The center panel shows various means by which moisture is created within a home and the right side of the display features scenes of homes where moisture has taken its toll.

As part of the display, a continuous color motion picture film is run. The film is titled "Water—The Hidden Menace to Homes" and illustrates the causes of moisture and the remedies to be taken.

Anyone desiring to secure the display or motion picture should contact the National Paint, Varnish and Lacquer Association, 1500 Rhode Island Avenue, N. W., Washington 5, D. C.

Glidden Representative To Confer With 3 Scandinavian Licensees

Three new Scandinavian licensees for the Glidden Company's Spred products will review manufacturing techniques with Philip Herzog, manager of the Glidden's paint and varnish division emulsion laboratory when he tours Norway, Sweden and Denmark in September, according to a company report.

The licensees are Wilhelm Becker in Stockholm, Sweden, Alf Bjercke in Oslo, Norway, and Sadolin and Holmblad in Copenhagen, Denmark. They will operate under a 10 year agreement with exclusive manufacturing and sales rights for the Spred products in their respective countries.

Production of Glidden's Spred prodcuts-Spred Satin, Spred Flat and Spred Luster, began this year in the Scandinavian countries and already have met capacity sales, the report said.

The report added that the new licensees have decided to adapt the American merchandising program and label for their own use.

Mr. Herzog who is serving as technical consultant to licensees, will also talk with emulsion experts in other European countries before returning to the United States late in September.

The Glidden company has also granted Spred licenses in Australia, France and Algeria.

Glidden first introduced Spred Satin, a latex wall paint, in 1949.

•

A-D-M- Announces New Detroit Representative

The newly formed A. E. Fleming Company will represent the Archer-Daniels-Midland Company in Detroit, according to a recent ADM announcement.

The new firm, located at 1900 East Jefferson Avenue, Detroit, Mich., will warehouse and distribute linseed, soybean and fish oils, paint vehicles and fatty acids manufactured by ADM.

A. E. Fleming, who heads the new company, is well known in Detrois circles having handled ADM productt since 1924.

NEWS DIGEST

Paint Chemistry Division Elects New Officers At Fall Meeting

The Division of Paint, Plastic and Printing Ink Chemistry elected the following officers at their business meeting held September 18: Chairman, Arthur K. Doolittle; Chairman-Elect, J. K. Wise; Vice-Chairman, A. C. Zettlemoyer; Secretary-Treasurer, C. F. Brown, and Executive Committee, H. Grinsfelder and F. Petke.

The vacancy on the Executive Committee incurred by Mr. Wise being elected to Chairman-Elect was filled by H. F. Payne.

On Wednesday, September 17, the Division announced the change in its name from Division of Paint, Varnish and Plastics Chemistry to its present title.

Also announced at the fall meeting, were plans for the coming year. The Spring meeting is scheduled for March 15-20, 1953, in Los Angeles, Calif. In addition to the general sessions, there will be two symposia: *Fire Retardant Paints*, M. W. Westgate, Chairman; *Finishes and Plastics for Aircraft*, A. L. Alexander, Chairman.

The fall meeting for 1953 will be held in Chicago from September 6-11. Two symposia are also scheduled for this meeting. They are: *Unsaturated Polyesters*, A. L. Smith, Chairman, and another under the direction of R. H. Kienle which will cover the theory and practice of pigment wetting, dispersion, and stabilization in organic coatings.

The Division requests any material which members feel will be of interest at the Spring meeting.

•

ASTM Announces Election Of Two New Officers

The American Society for Testing Materials announced recently, the appointment of Robert J. Painter as Executive Secretary and Raymond E. Hess as Associate Executive Secretary and Editor in Chief.

The action was taken by the Board of directors following a report of a special committee which had been appointed to recommend a successor to the late C. L. Warwick, former Executive Secretary of the Society, who died April 23.

Both men have been members of the ASTM for many years. Mr. Hess had been Assistant Executive Secretary and Editor, and Mr. Painter was most recently Treasurer and Assistant Secretary.

Elizabeth Clarkson of Wet Ground Mica Assoc. receiving American Trade Association Executives Award of Merit from D. C. Bliss, United States Minister to Canada at ATAE Convention

Wet Ground Mica Assoc. Wins ATAE Award of Merit

The Wet Ground Mica Association, Inc., recently won an American Trade Association Executives Award of Merit for distinguished service to its industry and to the American Public in promoting the use of wet ground mica in increasing volume as an extender pigment in the formulas of various types of paints, according to an Association bulletin.

The award, for small trade associations, was presented by Don C. Bliss, United States Minister to Canada, to Elizabeth Clarkson, Secretary-Treasurer of the Association, at the Annual Convention of the ATAE held September 22, at the Royal York Hotel, Toronto, Canada, the bulletin said.

Dr. Max Kronstein is conducting the present technical research program on the use of wet ground mica in paints, at New York University.

Dr. Heck Returns From Tour Of European Resin Industries

Dr. Adolph Heck, president of Alkydol Laboratories, Inc., recently returned from an extensive trip through parts Of Europe, especially Germany, where he studied the work of the synthetic resin and related industries.

Dr. Heck said that he interviewed a number of English and German experts in the resin and chemical industries, as well as German scientists specializing in high polymer work and had been able to bring back a number of processes. He added that the new processes may "prove very helpful to U. S. industry."

According to Dr. Heck, European and United States resin industries are in a similar position; more resin can be produced that can be sold, and competition is very keen resulting in low prices.

Dr. Heck made his trip in July and August.

•

Canadian Plant Assoc. Elects Pettet President

C. C. Pettet was elected President of the Canadian Paint, Varnish and Lacquer Association at the Associations 40th Annual Meeting held recently in Montreal, Canada, according to a company report.

Mr. Pettet had been general manager of the Association since 1946. He is also a vice-president of the Institute of Canadian Trade Association Executives, a Fellow of the Royal Society of Arts and a director of the Royal Empire Society.

Other officers of the Association are: Chairman of the board, J. H. Davey International Paints (Canada) Ltd. Montreal; Past-President, J. A. Brodie, International Laboratories, Ltd., Winnipeg; Vice-Presidents, R. W. Lindsay, Pratt & Lambert-Inc., Fort Erie, and W. A. Pendray, British American Paint Company, Ltd., Victoria. Directors are: G. C. McEwen, The Imperial Varnish & Color Company, Ltd., Toronto; H. Eastcott, Scarfe & Company, Ltd., Brantford; H. N. Glover, The Edmonton Paint & Glass Company, Ltd., Edmonton; Norman Holland, Brandram-Henderson, Ltd., Montreal; Leonard Hynes, Canadian Industries, Ltd., Montreal; Charles Morrison, The Glidden Company, Ltd., Toronto; A. G. Pinard, The Sherwin-Williams Company of Canada. Ltd., Montreal; W. A. Shone, Sturgeons, Ltd., Toronto; H. O. Farr, Canadian Pittsburgh Industries, Ltd., Toronto; D. A. Whittaker, The Sherwin-Williams Company of Canada, Ltd., Montreal, and Secretary-Treasurer, W. J. Spry, Montreal.

F. H. Haggerson, Union Carbide Chairman of the Board, Dies

Fred H. Haggerson, Chairman of the Board of Union Carbide and Carbon Corporation, died recently in New York after a brief illness. He was 68 years old.

Mr. Haggerson was associated with Union Carbide for more than 33 years. He became a vice-president of the Corporation in 1938, a director in 1941, president and member of the Executive Committee in 1944, and chairman of the board in 1951.

Because of his leadership in the field of metals, Mr. Haggerson was awarded the 1949 Medal for the Advancement of Research presented by the American Society for Metals.

Mr. Haggerson was also a trustee of Hamilton College, director of the Sault Ste. Marie Terminal Railroad, and a trustee of the Hanover Bank.

•

ACP Company Acquires New Plant at Niles, Cal.

The American Chemical Paint Company announced recently that it has acquired office and plant facilities on at Niles, California, about 25 miles southeast of San Francisco, and expects to be operating there about November first.

The firm expects to produce metal-working and agricultural chemicals at the new plant, the announcement said.

Mr. George H. Williamson will head the Niles plant and field representatives will provide technical servicing and consultation for ACP customers in the West Coast area.

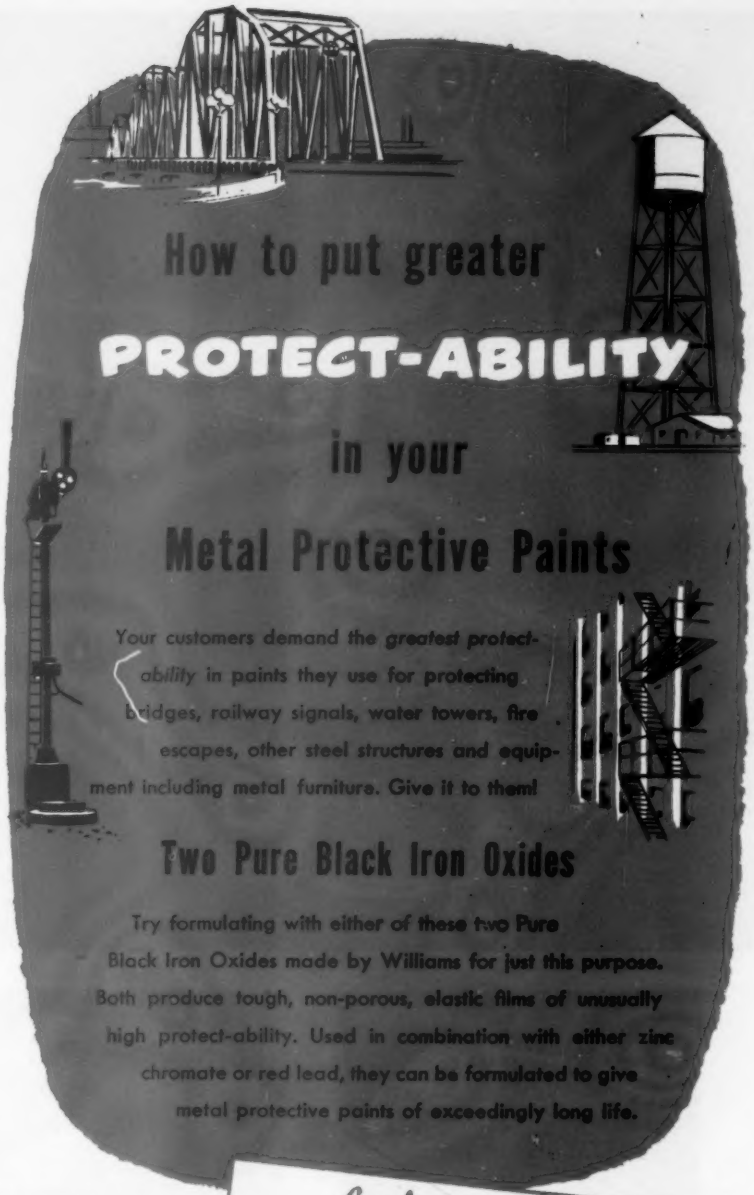
•

Improved Drum Design Adopted by Nopco Co.

The Nopco Chemical Company of Harrison, N. J., announced recently that its products are now being shipped in drums with an improved design.

A golden-yellow center band designed to make the black drums carrying Nopco products easily identified, is one of the features on the new drums. In addition, the drums will have extra stencilling of all important shipping marks on the bung side of the drums, as well as on the heads to facilitate warehousing in palletized units.

Nopco officials said that the new drums would replace all the old types in use presently in the near future.



For samples, ask your Williams representative or write us today for complete technical information. Address Dept. 23, C. K. Williams & Co., Easton, Pa.

Analysis of Williams Pure Black Iron Oxides B-247 and BK-250

$FeO + Fe_2O_3$	96.0% Min.
FeO	20.0% Min.
H_2O Soluble	0.5% Max.
Sp. G.	4.96
Fineness thru 325	99.5
pH Value	7-9
Avg. Diameter	0.4 microns

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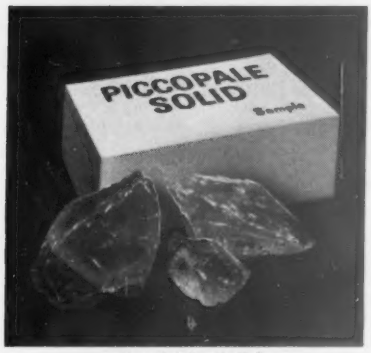

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A 100% Polymerized Petroleum Resin

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Transparent, Thermoplastic

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PICCOPALE is a completely new type of synthetic resin—not just another variety of one of the familiar types. It is entirely different from anything developed heretofore . . . is produced in very large quantities . . . and is priced low enough to make it feasible for use as a basic raw material.

PICCOPALE offers a new approach to improved quality and lower costs. This brand-new synthetic resin, developed and produced by Pennsylvania Industrial Chemical Corporation provides good chemical resistance, pale initial color, excellent compatibility and ready solubility.

If you are interested in a bulk material that is absolutely waterproof, that is easy to use with other materials, that is low in cost, high in quality and readily available, investigate PICCOPALE!

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Please send sample of PICCOPALE for *(application)*

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(check) flake ☐ solid ☐ liquid solution ☐

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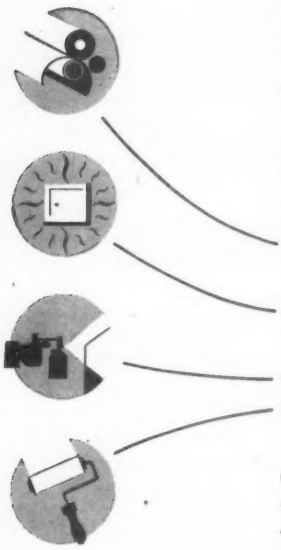
P&VP

INVESTIGATE HARSHAW'S NEW C. P. CADMIUM YELLOWS

Samples available for Trial!



For bright and stable colors in plastics, enamels and printing inks, consider Harshaw's new C. P. Cadmium Yellow pigments.

These new concentrated Cadmium Yellows have the heat and chemical resistance necessary to withstand severe processing and service conditions. Dispersion into plastics and rubber stocks is made easy by their soft texture, and full color strength develops quickly during the milling of enamels and inks.

In addition, C. P. Cadmium Yellows have these important properties:

- Maximum Strength—for lithographic inks and minimum pigmentation in plastics.
- Heat Resistance—for baking enamels, tin decorating inks and molded plastics.
- Alkali Resistance—for packaging inks and industrial coatings.
- Freedom from Flocculation—for latex and alkyd emulsion paints.

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C. P. CADMIUM PRIMROSE #220 C. P. CADMIUM LEMON #230 C. P. CADMIUM GOLDEN #240

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NPA Civilian Requirements Office Abolished In Favor of New Agencies

The office of Civilian Requirements has been abolished and its functions and staff have been transferred to the new office of Distribution, Department of Commerce, and to a new Civilian Requirements Division in the National Production Authority's Policy Coordination Bureau, R. A. McDonald, NPA Administrator announced recently.

Walter J. Currie resigned as NPA Assistant Administrator to assist Horace B. McCoy in the organization of the Office of Distribution.

Leslie P. Doidge, of Washington, D.C., formerly a special assistant to Mr. Currie, will act as director of the new Civilian Requirements Division. which will continue all the essential defense functions previously performed by the NPA's Office of Civilian Requirements.

The new NPA division will be responsible for defense production activities related to civilian requirements for consumer products and civilian production programs. It also will provide assistance to state, country and local governments, to wholesale, retail and service trades, and to private and religious institutions on materials problems arising from the defense program.

In addition, the division will be concerned with maintaining an adequate supply of essential civilian products, services and facilities so that the highest productive efficiency of the civilian populations may be obtained in support of the defense program.

Mr. Doidge's business career includes 18 years service with Barron G. Collier, Inc., of New York City, president of the Times Square Advertising Co., Inc., sales work in Virginia and Maryland, and directing his own manufacturing plant at Hall, Md.

•

Brazil Oiticica Appoints Brandt Sole Sales Agents in 4 States

Brazil Oiticica, Inc., New York City, has announced the appointment of George C. Brandt, Inc. as exclusive sales agents for Minnesota, Kansas, Kansas, Iowa and Iowa and Colorado.

George C. Brandt, Inc. has offices at 760 Vandalia Street, St. Paul 4, Minnesota and 1401 Fairfax Trafficway, Kansas City, Kansas.

E. Dale Albert — New York Production Club Executive Committee

New York Production Club Names New Officers

At its November meeting the New York Paint and Varnish Production Club inducted its new officers for 1952-1953 year. The new president is E. Dale Albert with W. E. Santoro as vice president, John Congleton as secretary, and Irving Flaumenhaft as treasurer.

The new 1952-1953 Executive Committee are: Standing, left to right: C. A. Aloia, Sun Chemical Co.; F. M. Damitz, National Varnished Products Corp.; W. J. Greco, Socony Paint Products; Irving Flaumenhaft, Lacquer & Chemical Corp.; E. S. Paterno, Technical Color & Chemical Works; Dr. Ralph Charlton, Congoleum-Nairn. Seated, left to right: E. Dale Albert, M. J. Merkin; Herbert Hillman, Eaglo Paint & Varnish Works; W. E. Santoro, Monroe Sander Corp.; John Congleton, Maas & Waldstein Co.

United Carbon Company Announces Completion Of Its Ivanhoe Plant

United Carbon Company, Inc., of Charleston, West Virginia, recently announced the completion of their Ivanhoe plant in South Louisiana for the manufacture of high abrasion furnace black (HAF type).

Built by Ford, Bacon & Davis Construction Corporation, the plant is located at United, Louisiana, on the Southern Pacific Railway, fifteen miles west of Franklin on the Intracoastal Canal in St. Mary Parish.

The newest engineering designs and advanced research in furnace black manufacture are combined in the new plant which has a capacity of more than thirty million pounds of black a year that is particularly required for low temperature synthetic rubber, the announcement said.

This black will be used in all types of tires and in automotive and mechanical rubber goods.

•

Keeling On Leave From Koppers To Serve As Director With NPA

T. C. Keeling, Jr., Assistant Vice-President and Chemical Division Sales Manager of Koppers Company, Inc., went on six months leave of absence to become Deputy Director, of the National Production Authority's Chemical Division at Washington, D.C. on September 19, a company report said recently.

Mr. Dan M. Rugg, Vice-President and General Manager of the Koppers' Division, said Mr. Keeling was being "loaned" to the government at the request of George E. Holbrook, Director of the Chemical Division, NPA. Mr. Keeling will return to Koppers on March 15, 1953, the report said.

•

Solvent Firm Executives Discuss New Product at Sales Meeting

A panel discussion on a new oderless mineral spirits for the manufacture of odorless paints and protective coatings. developed by the American Mineral Spirits Company, New York, highlighted the firm's three-day general sales meeting at the Cavalier Hotel, Virginia Beach, Va., held October 6th through the 9th.

The meeting was attended by about 50 sales executives from all parts of the country.

Among the top executives present were: Allin Vallentyne, Chicago, chairman of the board; E. M. Toby, Jr., New York, president; M. A. Williams, Chicago, vice president and sales manager; J. A. Bartle, New York, vice-president; George H. Schulz, Chicago, vice president and treasurer; Harold Pearson, Chicago, secretary; Fred B. Loeffler, Los Angeles, vice-president of the Western District and John Weiland, Chicago, vice-president of Leo Burhett, Inc., advertising representatives.

•

Troy Chemical Appoints Grant Firm As Sole New England Sales Agents

The Troy Chemical Company has the appointment of the Grant Chemical Company as exclusive sales agents in the New England territory.

The area includes Maine, New Hampshire, Vermont, Rhode Island, Connecticut and Massachusetts.

Mr. Donald Grant of the Grant Company has been associated with the paint industry since 1934.

Bakelite Coating Men Complete Training Course at Mellon

Bakelite Company, a Division of Union Carbide and Carbon Corporation, announced recently a number of organizational changes which are part of a plant designed to continually increase the efficiency of customer service and to place the primary responsibility for service to a given customer with one technical representative. The most recent of such changes involves the unification of the the two Divisions formerly known as the Thermosetting Coating Materials division and the Thermoplastic Coatings and Adhesive Materials division. The new consolidated group is to be known as the Surface Coatings division. This group will handle all the products Bakelite Company markets to the coatings industry; the principal ones being polystyrene and polyvinyl acetate emulsions, phenolics, modified phenolic, vinyl chloride and vinyl chloride-acetate solution and dispersion resins — such as are used for organosols used for cloth and metal coating and plastisols for slush molding — vinyl butyrals for wash primers, and for use with phenolics and other resins now being developed for the coatings field.

All Bakelite Company technical representatives servicing the paint, varnish, and allied fields have just completed an intensive training course at the Mellon Institute, Pittsburgh, Pa. where Bakelite maintains a Fellowship, and at Bakelite Research and Development Laboratories at Bloomfield, N. J. During these training courses the technical representatives obtained basic instruction on formulation and utilization of those products not previously handled by their respective groups.

The Surface Coatings Division is one of three Divisions composing the newly organized Industrial Products Department headed by Howard Smith who was formerly Manager, Varnish Resins Division. C. W. Patton is Manager of the new Surface Coatings Division, George A. Wells is Assistant Manager, and R. A. Calsibet is Assistant to the Manager.

•

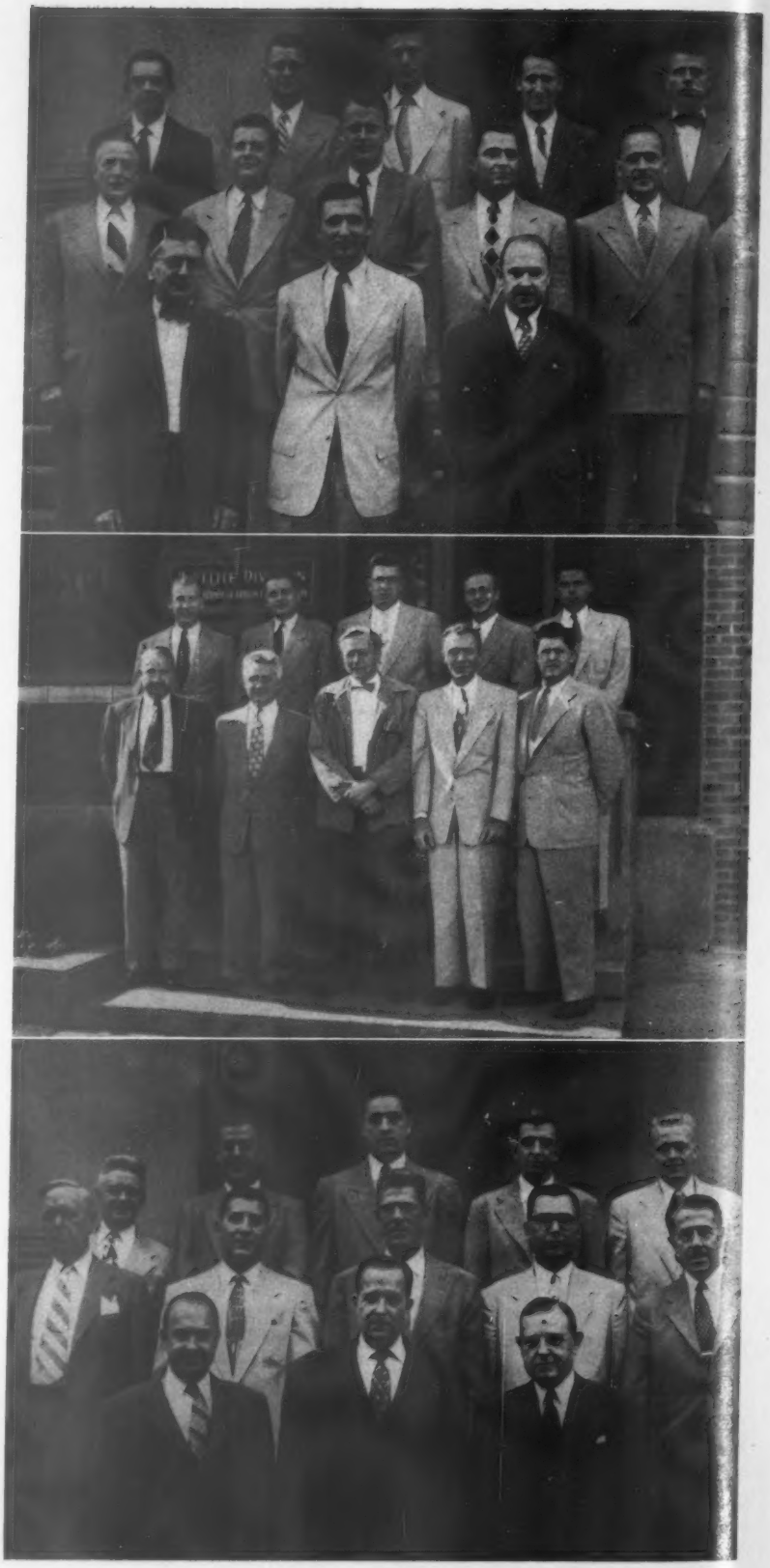
Top, (left to right): 1st row — W. K. Vollmer, W. H. McKnight, R. W. Quarles; Second row — C. R. Given, R. B. Waters, J. A. Ludlow, G. A. Wells, C. O. Schwahn; 3rd row — G. R. Smith, W. L. Graves, D. Quimby, A. C. Frechtling, J. M. Austin.

•

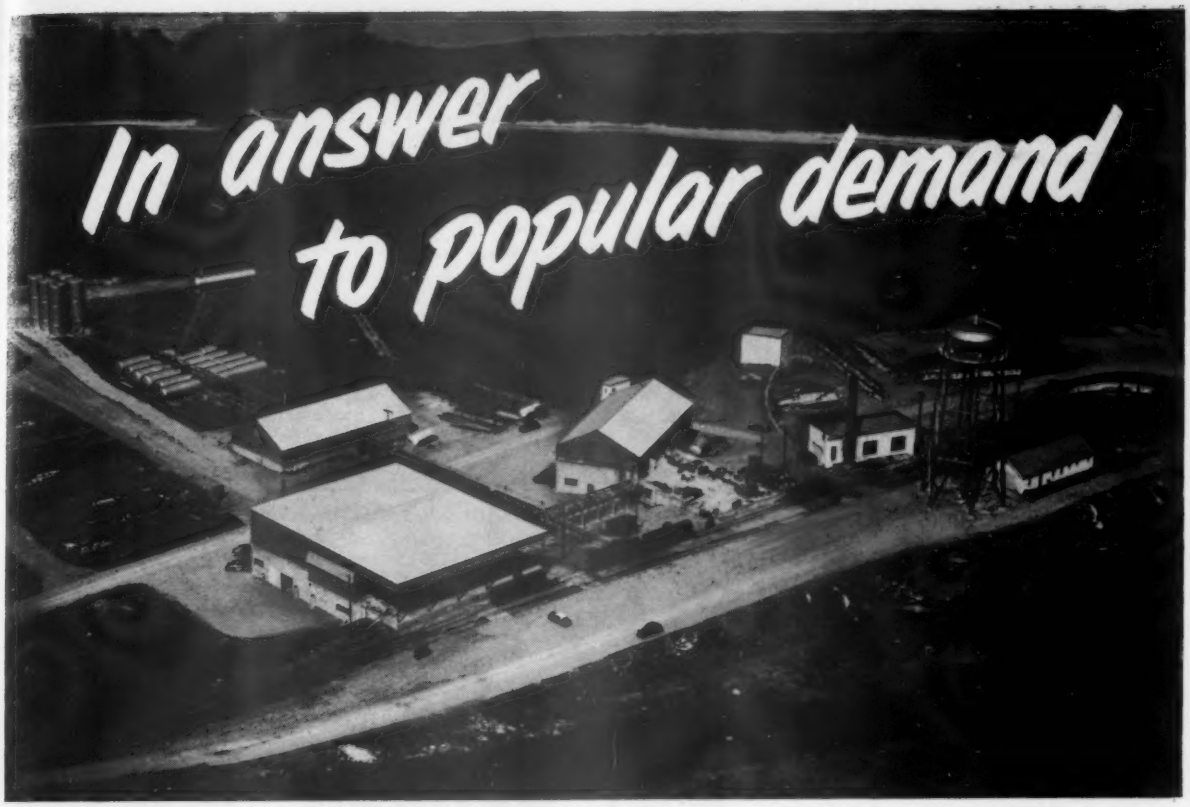
Center (left to right): 1st row — R. W. Quarles, K. V. McCullough, S. H. Richardson, R. A. Calsibet, C. S. Shoemaker; 2nd row — J. W. Veale, R. J. Martell, C. D. Droman, G. H. Curtis, J. T. Ingram.

•

Bottom (left to right): 1st row — R. W. Quarles, Howard Smith, E. R. Weidlein (Pres. of Mellon Institute); 2nd row — L. R. Whiting, D. M. Fix, C. W. Patton, R. L. Norum, P. A. Brenneck; 3rd row — K. V. McCullough, L. D. Maines, F. G. Bertics, A. A. Joiner, J. A. Nelson.



Bakelite Coating Technologists



SCHENECTADY RESINS

expands production with new plant

These brand new production facilities will help meet the need created by industry's wide acceptance of Schenectady's expanding line of alkyd, maleic, phenolic, terpene and other resins. The new plant, located just a few miles from Schenectady's headquarters, will take full advantage of the Company's extensive development laboratories while at the same time offer continous, full scale production from basic raw materials. Thus it will offer, in effect, a duplicate source of supply to all Schenectady customers.

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Export Distributors: Binney & Smith Co., International New York 17, N. Y.

SCHENECTADY

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Elect 9 Directors For 1953 At Colorizer Paint Dealers Meeting

Nine directors were elected for the coming year at the Vane-Calvert Colorizer Paint Dealers meeting held September 7, on White Gate Farm II, property of E. R. Meyer, president of the Vane-Calvert Paint Company of St. Louis, Mo.

About 200 persons attended the meeting including the dealers and their families.

Mr. Meyer addressed the group, outlining the activities and organizational plans for all dealers franchised in the Colorizer Paint System. His address was followed by a talk on the development of the group of 13 associated manufacturers known as Colorizer Associates, Inc., given by Ralph Moon of Bennett's, Salt Lake City, Utah.

Jack Berkley, sales manager of Vane-Calvert, described new product development and merchandising plans to the dealers, and T. E. Smith presented the advertising and sales promotional plans for the coming season.

The newly elected members of the Board of Directors are: T. E. Smith, Vane-Calvert Paint Company, St. Louis, Mo., Secretary; J. E. Moorehead, Southeast Missouri Lumber Company, Cape Girardeau, Mo., President; E. E. Stapleton, Stapleton Hardware Company, St. Louis, Mo.; William Fletcher, Arcadia Lumber Company, Arcadia, Mo.; Sidney Hiken, Hiken Brothers, Collinsville, Ill.; Earl Grigsby, Paul Steele Lumber Company, Springfield, Ill.; Carl Campell, Great Western Supply Company, Overland, Mo.; Arthur Young, South Side Wallpaper & Paint Company, St. Louis, Mo., Vice-President; and Henry Ruenpohl, Tower Grove Hardware Company, St. Louis, Mo.

•

B. Joachim Guest Speaker At New York Ink Production Club

Benjamin Joachim, Chemical Engineer of Superior Materials, Inc., New York, was guest speaker at the New York Ink Production club meeting held September 17, at the Southern Restaurant, New York City.

The subject of Mr. Joachim's talk was *Clay and Recent Developments in Aluminum Silicate Pigments.* In his talk, Mr. Joachim introduced new concepts on "Clay based" pigments, known as Aluminum Silicate Pigments.

Dr. Long To Represent U. S. At International Chemistry Union

Dr. J. S. Long, chemical director of Devoe & Raynolds Company, Inc. has been appointed to be one of the three United States representatives to the International Union of Pure and Applied Chemistry, according to William C. Dabney, president of Devoe.

Dr. Long's recent approval as a representative by the Division of Chemistry and Chemical Technology of the National Research Council, will make him part of the three man Commission for Organic Coating Materials representing America in international aspects of pure and applied chemistry dealing with protective coatings, Mr. Dabney said.

Troy Chemical Appoints New Agents For Northern Ohio Area

Ducros & Company has been appointed Agents for the area covering Youngstown through Canton, Columbus and Dayton, North to Toledo, Ohio, the Troy Chemical Company announced recently.

F. H. W. Ducros, for many years Treasurer of Smead & Small Inc., left the firm in 1951 to form his own company. Donald A. Campell and Linda Elmore also formerly associated with Smead & Small have joined Mr. Ducros in the new firm.

Ducros & Company represent many manufacturers of raw materials for the paint, rubber, petroleum and chemical trade.

Leading Latex Manufacturers Recommend

WET GROUND MICA IN LATEX PAINTS

WRITE FOR a compilation of these formulas published as:

TECHNICAL BULLETIN NO. 12
issued by
WET GROUND MICA ASSOCIATION, INC.
420 Lexington Avenue
New York 17, N. Y.

COMPILATION OF FORMULATIONS FOR LATEX PAINTS CONTAINING MICA, TAKEN FROM THE LITERATURE OF VARIOUS MANUFACTURERS

OF THE
WET GROUND MICA ASSOCIATION
420 LEXINGTON AVENUE, NEW YORK 17, N. Y.
Ask to be placed on the regular Association mailing list to receive subsequent Technical Bulletins based on research on the use of Mica in Latex and other type paints.

How to put more life into your

tinted house paints

at less cost

There've "been some changes made" in tinted house paint formulations in the past two years. Manufacturer after manufacturer has switched to Dutch Boy Basic Silicate White Lead "45 X."

All the advantages of "lead," plus . . .

You get dependable unformity of appearance with this new pigment: first, because it decreases water sorption and, thus, improves film integrity; second, because it makes a film that's highly resistant to rapid chalking and that releases dirt uniformly.

And you get these advantages at less cost. Here's why . . .

In Dutch Boy Basic Silicate White Lead "45 X," the reactive portion of each pigment particle is concentrated at the surface. This makes available proportionately larger amounts of "lead."

What's more, you use fewer pounds of "lead." 60 to 63 weight units of Dutch Boy Basic Silicate White Lead "45 X" equal 100 weight units of standard white lead types.

Cut costs . . . increase the decorative and protective life of your tinted house paints. Use Dutch Boy Basic Silicate White Lead "45 X" in your formulations.

**Dutch Boy*
Basic Silicate
White Lead**

"45 X"

"lead" at its efficient, economical best

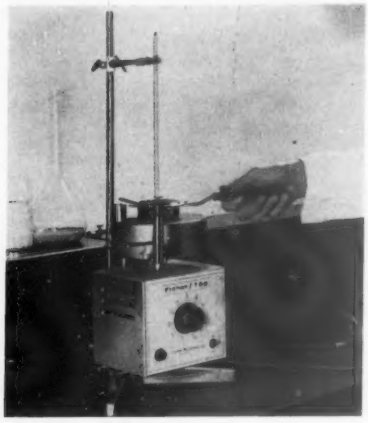
NATIONAL LEAD COMPANY: *New York 6; Atlanta; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.).*

*Reg. U. S. Pat. Off.

P&P NEW PRODUCTS & IMPROVEMENTS

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new and improved products. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



FISHER

TAG TESTER
For ASTM Flash Pt.

Three flash point testers have been redesigned to meet fully ASTM specifications for determining flash and fire points as given in designation D92. They are the gas model and two electric models of the Fisher/TAG Cleveland Open Cup Flash and Fire Point Testers. Among the improvements made in these units are: portability, slow heating efficiency, redesigned handle to eliminate burning of fingers. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

EPOXY PLASTICIZER
For Vinyls

Epoxy fatty acid esters are a new class of vinyl plasticizers which have an intrinsic stabilizing action, minimizing resin degradation due light and heat. This makes the addition of stabilizing agents unnecessary, according to the manufacturer. Buffalo Electro-Chemical Co., 43 Sawyer Ave., Station B, Buffalo, N.Y.

BARREL PUMP
Handles Range of Liquids

Pump can handle a wide range of fluids such as linseed oil, thinners, etc. Unit is self priming, continuous flowing and non-dripping, according to the manufacturer. Weighs only 8 lbs. Spout can be turned up to receive solvent for back flushing. Engineered Equipment Co., Box 207, Warsaw, Ind.

ENGINEERED

LACQUER SOLVENTS
High Boiling Type

3-methoxybutyl acetate and 3-methoxybutyl alcohol are available in commercial quantities.

3-methoxbutyl alcohol is a colorless liquid with a high dilution ratio, thus indicating its usefulness as a retarder type of lacquer componet. It is suggested as a replacement for medium boiling alcohols in automotive lacquers.

3-methoxybutyl acetate is a colorless liquid with a fruity odor. Experimental lacquers containing this solvent indicates its effectiveness in retarding blush and as a promoter of flow and high gloss; also as a solvent in automotive and hot spray lacquers. Chemical Sales Div., Tennessee Eastman Co., Kingsport, Tenn.

PALMER-SHILE

TRUCK, DRAIN RACK
Loads Automatically

Combination truck and drain rack is designed for industrial users of solvents, cutting oils and detergents.

To load just tilt truck against drum, sliding steel fingers down to engage top rim of drum; then rock truck back to wheeling position, and loading is automatic. Palmer-Shile Co., 12622 Mansfield, Detroit 27, Mich.

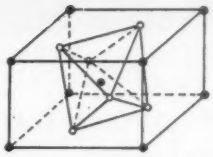
DISPENSING UNIT
For Aerosol Products

Valve dispensing unit for aerosol products is furnished with a separate spray head. The spray head is interchangeable with all cans using the threaded valve unit so the product packager need not supply a spray head with each can. Another feature is the patented, "Varispray" nozzle, available in four types.

It is claimed that this unit is useable with all types of products. The Varispray nozzle for paints, plastics and similar surfacing products is adjustable to a horizontal or vertical pattern which, it is claimed, gives a 30% greater coverage. Another nozzle giving a small round spray is intended for use with marking liquids and paints. Pressure Pack, Inc., Detroit 31, Mich.

All Titanox "pure" TiO_2 pigments NOW AVAILABLE IN GOOD SUPPLY

Due to expanded production facilities, all these Titanox —rutile and anatase—"pure" titanium dioxide pigments are in ample supply to meet your needs.



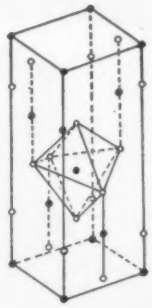
RUTILE

-RA General purpose "semi-chalking" pigment—used mainly in highest gloss, highest hiding white and light tinted industrial product finishes and highest quality architectural interior enamels. Applicable to Fed. Spec. TT-T-425a, Type II.

-RA-NC "Non-chalking" pigment—used mainly in tinted finishes which are exposed to the weather, such as those for industrial products, equipment, transportation vehicles, etc. Applicable to Fed. Spec. TT-T-425a, Type III.

-RA-50 Multi-purpose pigment combining high chalking resistance (but not as high as -RA-NC) with other properties similar to those of -RA. Used mainly in white and tinted high gloss finishes and combination interior-exterior white and tinted finishes.

-RA-10 Unmodified for special effects such as resistance to chalking and lessening of after-yellowing. Finds limited use in exterior white house paints and emulsion and latex paints.



ANATASE

-A-MO General purpose chalking type (MO- medium oil absorption, also LO- low oil absorption). Used mainly in white exterior house paints usually with rutile TiO_2 or rutile-calcium pigment to regulate chalking and prevent excessive dirt collection. Applicable to Fed. Spec. TT-T-425a, Type I.

-A-168-LO Anatase counterpart of -RA, except chalking type (LO- low oil absorption, also MO- medium oil absorption). Used in enamels and metal decorative coatings in which anatase pigment is preferred. Also used in white house paints.

-AA "Semi-chalking" pigment largely replaced by Titanox-RA.

Through their range of desirable qualities these Titanox titanium dioxide pigments fit any line of coatings from the most highly specialized to the most highly diversified.

Titanium Pigment Corporation, 111 Broadway, New York 6; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

® TITANOX

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

1086A

ACRYLIC RESIN
Low Cost

This resin is a water-white solid polymer of an acrylic type ester. It possesses excellent clarity and resistance to chemicals, is durable, and has low pigment reactivity, according to the manufacturer Acryloid B-82, 100% does not have a sharp melting point, but softens instead in the range 70-80°C. and flows at 140-155°C. It is also available as a 40% solution in toluol, in which form it has a viscosity of 400-700 centipoises. Acryloid B-82,100% is soluble in toluol, xylol, and other aromatic. Acryloid B-82, 100% can be used for the production of many specialty coatings for wood, metal, plastic materials, and fabrics. Its crystal clarity makes it particularly attractive for novelty and decorative coatings. It is claimed that this resin is a good vehicle for fluorescent and phosphorescent pigments because of its low reactivity with these sensitive materials.

Technical literature describing in full the properties of Acryloid B-82 - 100% may be obtained by writing the Rohm and Haas Company, Washington Square, Philadelphia 5, Pa.

Chats about Finishes

"PEP UP" YOUR FINISHES WITH DYMEREX* RESIN

by

J. N. BORGLIN

Technical Service Representative
Hercules' Naval Stores Department

Today everyone seems to want finishes with special properties tailored to meet the exacting needs of industry and of the home. Paints must dry faster, be harder, and more resistant to chemical attack or weathering.

Hercules Dymerex resin is helping pep up these properties of finishes in many types of paints and varnishes. Dymerex is a thermoplastic resin consisting chiefly of dimeric resin acids. It has a very high melting point and excellent solubility and oxidation resistance.

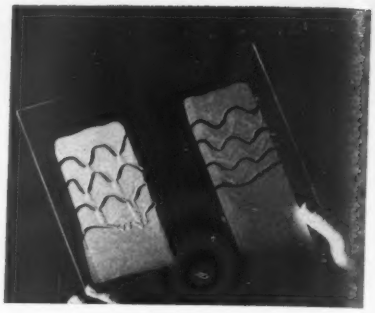
Let me tell you more about the properties of Dymerex resin. Write me, and I'll send our latest bulletin and, if you wish, a sample.

J. N. Borglin

*TRADEMARK

Naval Stores Department
HERCULES POWDER COMPANY
INCORPORATED
926 Market Street, Wilmington 99, Del.

IC52-6



GRIFFIN

MIXING-GRINDING AID
Controls Sagging

Tenlo-70 is a mixing and grinding aid that offers savings as much as 50% in the time required for these operations, according to the manufacturer. Other advantages claimed are: increases gloss, retards hard settling, overcomes silking and flooding, and controls sagging and running in finished paints.

The manufacturer has devised a test which point up the anti-sag properties of this mixing and grinding aid as follows:

Retaining an untreated sample as a blank, laboratory technicians have simply stirred a little Tenlo-70 into the paint remaining in the container purchased from a dealer. (The proportion of Tenlo-70 added is 7 pounds per 100 gallons of paint.) The sample is allowed to age overnight, and the following day a Bird Applicator is used to lay a uniform 3 mil (0.003 in.) film of the untreated and Tenlo-treated enamels on a plate-glass panel. A rubber eraser is then drawn across both films to form a series of wavy lines, and the panel is placed in a vertical position to dry.

The results obtained from one such typical test are shown in the accompanying photograph. Sagging and running was either completely eliminated or greatly retarded in the Tenlo -70 treated sample, right, as compared with the blank. In some cases the gloss of high lustre enamels was actually increased, while in no case investigated was the gloss adversely affected.

When the "sagging test" plate and samples are taken to the manufacturer, they present a visual display of an effective means of controlling sagging in his enamel by a simple addition to the finished product. And of course the results can be verified quite easily in his own laboratory.

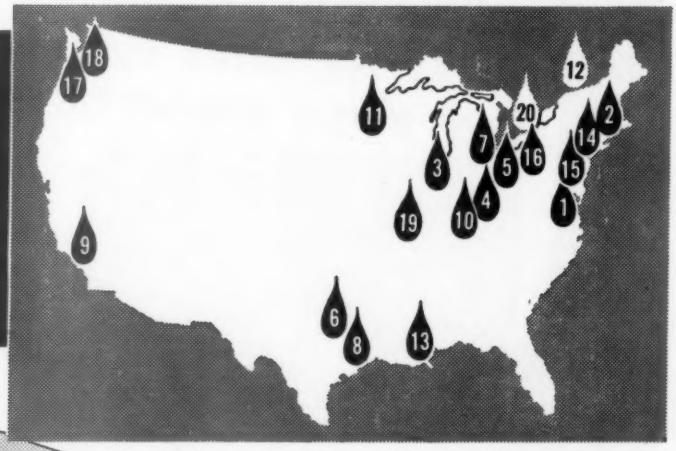
For literature and working samples of this mixing and grinding aid, write to the Griffin Chemical Co., 1000 16th St., San Francisco 7, Calif.

- SPECIFICATIONS?
- AVAILABILITIES?
- MARKET PRICES?
- WHICH OIL TO USE?
- HOW TO SAVE MONEY?
- HOW TO GET BETTER RESULTS?

WHAT DO YOU WANT TO KNOW ABOUT VEGETABLE OILS?

YOUR LOCAL...

PACIFIC VEGETABLE OIL CORP.



...representative can give you the right answers. Call him today.

62 TOWNSEND STREET,
SAN FRANCISCO 7, CALIF.

INDUSTRIAL OILS:

Linseed, Tung, Safflower, Soya, Oiticica, Castor, Sardine. Also Coconut oil, Tallow, Cottonseed oil, Lard, Walnut oil and others.

1 BALTIMORE, MARYLAND
W. R. McClayton

2 BOSTON, MASSACHUSETTS
Raw Material Company

3 CHICAGO, ILLINOIS
The Daniel G. Hereley Company

4 CINCINNATI, OHIO
Deeks & Miller, Inc.

5 CLEVELAND, OHIO
The Donald McKay Smith Company

6 DALLAS, TEXAS
W. W. Richerson Co.

7 DETROIT, MICHIGAN
Geo. E. Moser & Son, Inc.

8 HOUSTON, TEXAS
Texas Solvents & Chemicals Co.

9 LOS ANGELES, CALIFORNIA
California Flaxseed Products Company

10 LOUISVILLE, KENTUCKY
B. H. Boyet and Company
Deeks and Miller Company

11 MINNEAPOLIS, MINNESOTA
Horton-Earl Company

12 MONTREAL, QUEBEC, CANADA
B. & S. H. Thompson and Company, Reg'd.

13 NEW ORLEANS, LOUISIANA
Russell Chemical Company

14 NEW YORK CITY, N. Y.
Garrigues, Stewart and Davies, Inc.

15 PHILADELPHIA, PENNSYLVANIA
Baker Industrial Oil Company

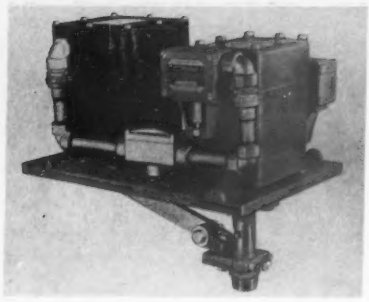
16 PITTSBURGH, PENNSYLVANIA
Emmett D. Griffin, Jr.

17 PORTLAND, OREGON
W. Ronald Benson, Inc.

18 SEATTLE, WASHINGTON
W. Ronald Benson, Inc.

19 ST. LOUIS, MISSOURI
Ivan T. Bauman Co.

20 TORONTO, ONTARIO, CANADA
B. & S. H. Thompson Company



NORCROSS

VISCOMETERS
Recording Type

Viscometer is designed for polymerization and other processes used in the manufacturing of bodied oils, resins, paints, varnishes, lacquers, linoleum, and plastics. The manufacturer claims that this instrument records the viscosity of the product on a 24-hour chart, showing the viscosity build up. These viscometers are furnished with an alarm which can be adjusted to signal the proper termination point for the process. This instrument can be applied to the reactor or kettle. For complete details contact the Norcross Corp., 247 Newtonville Ave., Newton 58, Mass.

ALKYD SOLUTIONS
For Flat Wall Paints

Four alkyd resins for flat wall paints are available. These include:

Falkyd Solution J-9 — An alkyd for deeptone flats with non-penetrating properties.

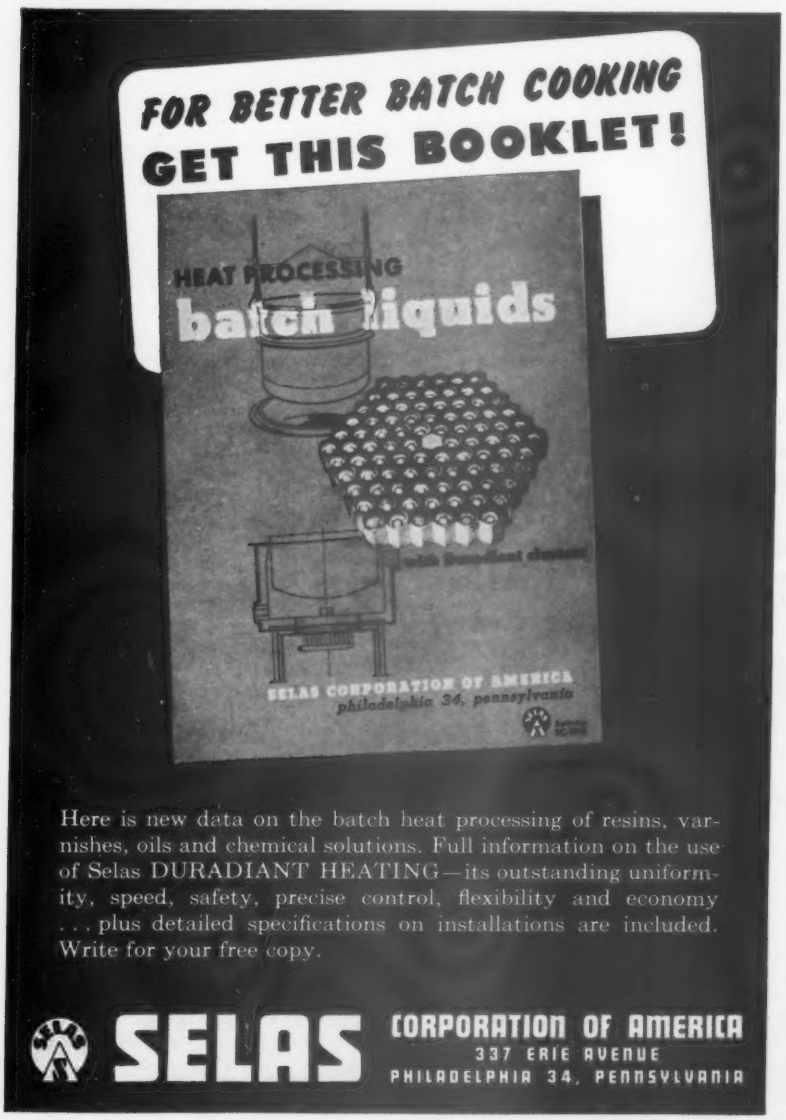
Falkyd Solution J-97 — Similar to Falkyd Solution J-9 but lower viscosity for ease of handling.

Falkyd Solution B-365 — A pure oil alkyd in odorless solvents for first quality white and pastel flats.

Falkyd Solution B-360 — A pure medium oil length alkyd in normal petroleum thinner for first quality white and pastel flats.

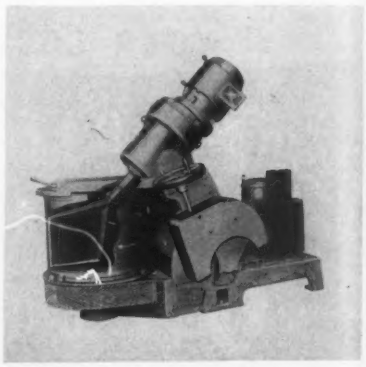
These resins are offered in all quantities for drum or bulk shipment.

Data sheets and samples are available upon request to: Falk Division, Cargill, Incorporated, P. O. Box 1075, Pittsburgh 30, Pennsylvania, on your company letterhead.



Here is new data on the batch heat processing of resins, varnishes, oils and chemical solutions. Full information on the use of Selas DURADIANT HEATING—its outstanding uniformity, speed, safety, precise control, flexibility and economy . . . plus detailed specifications on installations are included. Write for your free copy.

SELAS CORPORATION OF AMERICA
337 ERIE AVENUE
PHILADELPHIA 34, PENNSYLVANIA



TROY

CHANGE TUB MIXER
For Pilot Runs

Small angular change tub mixer is designed for small production batches with 5 to 6 gals. working capacity. The unit operates with the same mixing action characterized by the production sizes of 40 and 60 gallons capacity. This can be described as a combination mixing-shearing action with the arms of the agitator sweeping side and bottom of the rotating tub. The action also folds in the material at the top and lifts up from the bottom. According to the manufacturer, this action combined with the rotating tub results in uniform mixing in short cycles. Agitator can be easily removed for tub change or for changing agitator. By disconnecting agitator drive clutch, the tub alone can be rotated permitting mixing and wetting before agitation. Troy Engine & Machine Co., Troy, Pa.

VELSICOL AD·63 AD·21

HEAT-REACTIVE HYDROCARBON RESINS

MEET YOUR SPECIFICATIONS

in air-dry and baking oleoresinous protective and decorative coating vehicles

PROPERTIES

- Low degree of solvent retentivity.
- Non-acidic.
- Non-saponifiable.
- Coatings resistant to water, aqueous acids and alkalis.
- Soluble in aliphatic and aromatic naphthas.
- Compatible with vegetable and marine drying oils.
- Vehicle films are hard, flexible and adherent.
- Resin solutions promote excellent leafing and flooding of aluminum pigment.

SUGGESTED APPLICATIONS

- Aluminum vehicles.
- Floor and trim vehicles.
- General utility varnishes.
- Traffic paints.
- Extenders for 100% oil soluble phenolic resins.
- Extenders for Chlorinated rubber.
- Metal primers.
- Drum coatings.
- Decorative can enamels.
- Grinding liquids.

WRITE FOR TECHNICAL BULLETINS

VELSICOL CORPORATION

General Offices and Laboratories
330 E. Grand Ave., Chicago 11, Ill.

Export Division
100 E. 42nd St., New York 17, New York

REPRESENTATIVES IN PRINCIPAL CITIES

Marbon "9200" PAINT CHIPS

Marbon "9200" PAINT RESIN

Offering Greater Advantages for EVERY Paint Formulator

- Ideal for smaller manufacturer.
- Easily prepared for wide variety of finishes.
- Colors and pigments already dispersed in resin.
- Ready for direct mixing into solvents.
- Spraying and dip-coating formulation easily prepared.
- Enjoy faster drying concrete paints with higher gloss plus excellent hiding power.

- Ideal for large manufacturer.
- Offers wider compatability with paint resins, plasticizers and extenders.
- Greater resistance to acids and alkalies.
- More fluid flexibility of compounding to any desired finish.
- Tremendous adaptability and durability, plus easily controlled drying time.
- Excellent can and dip-tank stability.

Use for Traffic, Stucco, Concrete Paints, Acid-Resistant Enamels, Industrial Aluminum Finishes, Plaster Wall Sealers, etc.

Marbon

MARBON CORP.

GARY, INDIANA

SUBSIDIARY OF BORG-WARNER

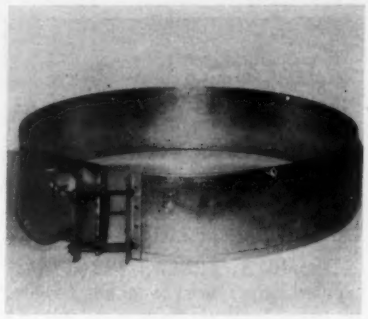
MARBON *. . . Your Buy-Word for Product Perfection*

EXPLOSIMETER
Detects Hazardous Vapors

MSA Explosimeter, a portable instrument, is used to detect hazardous gas or vapor-air atmospheres. This instrument has been listed by Underwriters' Laboratories, Inc. Provided with this instrument is a sampling line of synthetic rubber, recommended for use in remote sampling of atmospheres which may be explosive. Mine Safety Appliance Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

PETROLEUM SOLVENT
Fast Drying

Amsco Naphthol Spirits is a good-odored solvent with extremely fast drying characteristics derived from its low 335 deg. F. dry point, according to the manufacturer. It is said to have a high safety factor as indicated by its Tag Closed Cup flash point of 102 deg F. Adaptable for paints, varnishes, brushing lacquers, polishes, etc. Available in tank car and drum quantities. American Mineral Spirits Co., 230 N. Michigan Ave., Chicago 1, Ill.



ACRA

WRAP AROUND HEATER
For 55-gal Drums

Heating unit is used for heating standard 55-gallon drums containing materials having properties requiring preheating to facilitate removal from containers. Quick application or removal of wrap-around heater is possible by using only a screw driver. Wattage concentration is low enough so as not to burn material content in most instances. Acra Industrial Electric Co., 9901 Pacific Ave., Franklin Park, Ill.

LATEX CURING AGENT
Improves Film Properties

Cyclodex, a catalyst is designed to accelerate the curing of many latex emulsions, according to the manufacturer.

Test results indicate that this catalyst improves adhesion of latex films and increases film toughness to resist damage or injury by rubbing, scuffing or marring. It is claimed that latex primers containing Cyclodex require less time before application of oil or resin type top coats, according to laboratory data. Better washability of latex emulsions before and after aging is also reported.

This catalyst is a free-flowing, water dispersible liquid easily incorporated into latex formulations. It is said to be economical to use because, where it has been successfully employed, low percentages were required to obtain satisfactory results.

A complete report on Cyclodex, which describes a test method for measuring the washability of latex emulsion paints and obtaining reducible results, is available from Nuodex Products Co., Inc., Elizabeth F, N.J.

Personnel Changes

GENERAL ELECTRIC

Donald A. Hilliard has been appointed supervisor of quality control in the Chemical division alkyd resin plant at Schenectady, N.Y. He was previously employed as plant manager for the Bristol, Pa., plant of the Nu-Enamel Corporation.

BAKER

Frank Walsh has been appointed sales representative for the Middle Atlantic regions, covering eastern Pennsylvania, Delaware, Virginia, Maryland, and the Carolina's with headquarters in Philadelphia. Mr. Walsh previously served on the sales staff or Merck & Company, Inc.

BRAZIL

E. B. McCullough Co., 2301 Commerce St., Houston 2, Texas, have been appointed as exclusive sales agents for Houston. The territory will include the cities of Beaumont, Corpus Christi, San Antonio, Austin and El Paso.

G. W. Huldrum

V. C. Irvine

SHELL

G. W. Huldrum, Jr., has been appointed sales manager of the Eastern Division and **V. C. Irvine** has been named Western Division sales manager. Mr. Huldrum will supervise all sales activities east of the Rocky Mountains for Shell's solvents, resins and plastics. His office will be at 500 Fifth Ave., New York City. Mr. Irvine will head sales activities in ammonia and ammonium sulphate, fertilizers, solvents for varnishes and lacquers, plastics and resins, and industrial chemicals west of the Rockies. His headquarters will be at 100 Bush St., San Francisco.

PITTSBURGH COKE

R. M. Marshall, president of the Pittsburgh Coke & Chemical Company, has announced the organization of a foreign department to direct all the firm's overseas operations. **Robert Kirk** has been appointed manager of the department and **David H. Hoyer** appointed sales manager. Mr. Kirk was formerly export manager for the chemical division of McKesson & Robbins, Inc., for six years. Mr. Hoyer had been directing the export sales of agricultural chemicals for Pittsburgh Coke since 1948.

RINSHED-MASON

William R. Barrett has been appointed vice-president and general manager of the Detroit plant. **Lyle E. Frohberg** will succeed him as general sales manager, and **William L. Vyn** steps up to sales manager of the industrial finishes division. Mr. Barrett joined Rinshed-Mason in 1947. He previously was assistant sales manager at the Reichhold Chemical Company.

Joseph R. Mason has been appointed vice-president and manager of the automotive refinishing division. He was previously assistant automotive refinishing sales manager. Mr. Mason will be aided by **George F. Diedrich** as assistant manager, and **George Moule** as manager of the shipping and warehousing section. The automotive refinishing division is now being organized as a distinct and separate division with complete responsibility for all warehousing, distribution and sales of refinishing materials.

MICA WATER-GROUND "At Its Best"

Every Paint manufacturer using Water-Ground Mica should be using "Concord" because:

1—It is ground exclusively from a clean, white Muscovite Mica scrap imported from India and Africa.
2—It is whiter and purer.
3—It is strictly competitive in price.

Send for samples and prices

CONCORD MICA CORPORATION

35 Crescent Street -:- Penacook, N. H.

"Pioneers in producing Mica for Paint"

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) of PAINT AND VARNISH PRODUCTION, published monthly at Easton, Pa., for October 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher: John Powell, 855 Avenue of the Americas, New York City.
Editor: Anthony Errico, 855 Avenue of the Americas, New York City.
Managing editor: None
Business manager: None

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)
Powell Magazines, Inc., 855 Avenue of the Americas, New York City.
John Powell, 855 Avenue of the Americas, New York City.
Ira P. MacNair, 254 W. 31st Street, New York City.
Alice L. Lynch, 855 Avenue of the Americas, New York City.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and tri-weekly newspapers only).

JOHN POWELL, Publisher

Sworn to and subscribed before me this 22nd day of September, 1952
(SEAL)

Daniel D. Randall.
Notary Public, State of New York
No 03-8491000
Qualified in Bronx County
Certs. filed with Bronx and New York
County Clerks and Registers
(My commission expires March 30, 1954)

There is growing recognition that mold and mildew are serious causes of paint disfiguration and deterioration. Accordingly, more and more users of paint are demanding coatings that are protected against mildew.

Properly formulated, Milmer 1 (copper 8-quinolinolate) is, by far, the most effective fungicide commonly used in paints. Two per cent or less, by weight, makes paint resistant to fungi. Many fungicides have been developed, but very few are effective in paint; *none* offer the combination of effectiveness and low toxicity to humans found in Milmer 1.

For information on the use of Milmer 1 in paints, for names of suppliers of paints containing Milmer 1, or for technical literature on the fungicide, write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.

Milmer: Reg. U. S. Pat. Off.

MILMER 1

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

DEVOE & RAYNOLDS

I. K. Scott has been appointed manager of the technical division, succeeding **Mr. Roscoe H. Sawyer** who recently resigned. **Mr. George W. Neumann,** formerly assistant to Mr. Scott, has been appointed to succeed him as director of the Industrial-Marine-Resins & Chemicals laboratory.

CONTINENTAL

John S. Devlin has been appointed district sales manager of the Houston district and **Bruce R. Peterson** has been appointed district sales manager of the Milwaukee district. Mr. Devlin joined the firm in 1948 and served successively as sales manager of steel containers, executive vice-president of the Metal division and control officer in the New York office. Mr. Peterson joined Continental in 1947. Previous to his new appointment he was Boston district sales manager of the Eastern Metal Division. He has also served as sales representative in Philadelphia and New York, and staff assistant in the E stern Division offices.

MAUTZ

William T. Hallman has sold his interest in the Burks-Hallman Company of Memphis, Tenn., and has joined the Mautz Paint and Varnish Company, Madison, Wis., as plant superintendant. He organized the Burks-Hallman Company in 1946, along with Odell Burks. Mr. Hallman began his career in the paint industry with the DuPont Company in Philadelphia. He successively became associated with the Illinois Paint Works of Chicago, as a laboratory assistant, and the DeSota Paint and Varnish Company, as general supertendent.

WITCO

Otto F. Slonek has been added to the staff in a technical sales capacity on chemicals. He was formerly manager of Industrial Chemical Service, Inc.

L. D. Koch

Lester D. Koch has been appointed eastern sales manager. He will handle Witco's line of chemicals including metallic stearates, paint driers, stabilizers and plasticizers. Mr. Koch, who is also vice-president of the firm, will continue to supervise the Export-Import Department.

McCloskey's No. 10510

UNIVERSAL TINTING PASTE VEHICLE

The greatest money-saver and improvement for paint manufacturers since the discovery of titanium. Our technical staff have perfected an entirely new vehicle which is a must in every paint manufacturing plant, not only because it will save the paint manufacturer hours of labor and untold loss through waste such as skinning, hardening, etc., of tinting color, but reduces the tinting color of a manufacturer to one tinting vehicle for all types grinding mediums.

This marvelous vehicle eliminates the necessity of grinding tinting colors in different vehicles to meet the demand of each particular product. Frankly, you cannot afford to be without McCloskey's No. 10510.

Imagine . . .

ONE TINTING PASTE FOR--

STYRENATED ALKYDS
LONG OIL ALKYDS
MEDIUM OIL ALKYDS
SHORT OIL ALKYDS
HOUSE PAINTS
LACQUERS
OLEORESINOUS VARNISH ENAMELS
UREA RESINS
CHLORINATED RUBBER
MELAMINE RESINS

100% TINTING COMPATABILITY WITH ALL OF THESE

Order a drum or a five-gallon container of this material at our risk.

McCLOSKEY VARNISH CO.

PHILADELPHIA • CHICAGO
PORTLAND, ORE. • LOS ANGELES

CALCO

Ames B. Hetterick has been appointed manager of the newly-formed Calco Engineering and Development Department. The new department consolidates all engineering and process development functions heretofore a part of the Production and Technical Departments. Mr. Hetterick has had an extensive background in the development of the commercially important titanium dioxide pigments. He became associated with Calco in 1944 when it took over the Virginia Chemical Corporation where he was vice-president and general manager. Mr. Hetterick became works manager of the Piney River, Virginia, Plant operation and in 1946 assistant manager of manufacturing for the Calco Chemical Division.

BOWSER

Robert L. Holt has been appointed vice-president. In addition to his new position, Mr. Holt will continue as vice-president and director of the Pacific and Atlantic Shippers Association, a post he has held for 15 years, and a director of the Missouri Edison Company, where he has been a member of the board for six years. Mr. Holt has been on Bowser's board of directors for two and one-half years, and on the Finance Committee for a year and one-half. Prior to his present appointment, he was vice-president of H. M. Byllesby and Company of Chicago, and before that, vice-president of Blair, Rollins and Company, Inc., of Chicago.

R. L. Holt

Synthetic Chemicals, Inc.

Offers

Sotex Dispersing Agents for use wherever pigments and other materials are dispersed. A complete range of Sotex types are available to meet specific requirements.

The Sotex Agents will increase production by shortening the milling cycle.
Finer particle size is obtained in a much shorter time period.
Improved gloss in enamels and gloss finishes.
Reduce flocculation.
Control of viscosity and film thickness in dip and flow coating.
Greater color development due to finer particle size.
Rapid deflocculation of hard pigments with a minimum of shear.
Greater stability of final product.

The Sotex non-ionic agents Sotex N, Sotex 3CW, Sotex CW, Sotex N Hydrophylic — completely soluble in water also soluble in polar solvents.

Sotex N is used in quantities of 6% to 8% with water to prepare water dispersable pigment pastes which are stable to acid systems and electrolytes.

Sotex N is also used in quantities of ¼% to ½% in Alkyd and Oleo-resinous systems, particularly, quick bake enamels to release any internally locked moisture reducing haze and improving gloss.

Sotex 3CW is the opposite of Sotex N. It is insoluble in water, only very slightly soluble in polar solvents, but very soluble in hydrocarbon solvents both Aliphatic and Aromatic. Sotex 3CW is most effective in Alkyd and Oleo-resinous vehicles which contain hydrocarbon solvents. Sotex 3CW is a mutual solvent for all organic systems.

Sotex CW has the greatest range of solubility and compatability of the Sotex non-ionic agents. It is most effective in systems which require alcohol and ester solvents with hydrocarbon solvents such as in nitro cellulose solutions, nitro cellulose inks, and lacquers.

Sotex CW is most effective in non-polar vehicles such as primary and secondary plastisizers, particularly, where plastisizer dispersions are incorporated in systems which contain both polar and non-polar solvents.

Sotex CW is used in vinyl organasols and plastisols, also for color dispersions in vinyl inks both letter press and roto graveure.

The Sotex cationic agents are Sotex C, Sotex CX and Sotex NC.

Sotex C is the most potent of the cationic agents and is used for dispersions in oils and varnishes and ink vehicles which contain no solvents, or very little solvent.

Sotex CX is used alone or in combination with Sotex 3CW for Alkyd and Oleo-resinous dispersions. Sotex CX will have the widest application of the Cationic Sotexes. Sotex CX is most compatable with hydrocarbon solvents.

Sotex NC is used alone or in combination with Sotex CW for systems which contain both hydrocarbon and alcohol or ester solvents; such as, nitro cellulose lacquers, inks, vinyl lacquers and vinyl inks, also, organasols and plastisols. Sotex NC is an effective anti-static agent in vinyl systems.

For Technical Data and samples write

Phone
Mulberry
4-1726 4-1727

SYNTHETIC CHEMICALS INC.
335 McLean Boulevard
Paterson 4, New Jersey

Cable Address
Patchem Paterson

CALCO

John Dietze has been appointed sales representative on the staff of R. N. Griswold, Mid-Central Regional sales manager. He will cover the Detroit-Toledo-Cleveland territory and make his headquarters at the Cleveland office. Mr. Dietze joined Calco in 1947 and was made a Pigment Department sales representative in the New York territory two years later.

EAGLE-PICHER

Kenneth B. Kleinsorge has been named assistant general sales manager of the Paint and Varnish Division. He previously served as divisional sales manager for a paint manufacturing firm. In his new capacity, Mr. Kleinsorge will be in charge of merchandising and promotion in Eagle-Picher's Paint and Varnish Division.

BOSTON VARNISH

Renshaw Smith, Jr., has been elected executive vice-president and general manager. He was most recently associated with the Vita-Var Corporation, Newark, N. J., as vice-president in charge of trade sales. Mr. Smith was also associated with the Devoe & Reynolds Company of New York, from 1924 to 1951, rising to become vice-president and director of trade sales.

ARNESTO

Norman M. Bilenker has been appointed regional sales representative for Southern New Jersey. He has been associated in the paint industry for many years. Mr. Bilenker has been with the Schalk Chemical Company, Los Angeles, the Baltimore Paint & Color Works, and the Pentagon Paint & Color Company.

SYLOID 308 makes it possible for you to realize new high standards in flatting efficiency . . . producing a modern flat finish at a lower cost. Mill room savings are increased because Syloid mill bases can be made highly concentrated with a very short grinding time. Capacity is often doubled . . . less flatting agent is required.

SYLOID 308 is a finely-sized synthetic silica of extremely high purity. Particle size is controlled to give uniformity in flatting results.

For information on how you can flatten finishes . . . economically . . . uniformly with **SYLOID 308** . . . for help on a specific problem . . . write Davison's Technical Service Department.

*T. M. Reg. Applied For

Progress through Chemistry

THE DAVISON CHEMICAL CORPORATION

Baltimore 3, Maryland

PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, AND SILICOFLUORIDES. SOLE PRODUCERS OF DAVCO GRANULATED FERTILIZERS

GIVAUDAN

R. E. Horsey has been appointed vice-president in charge of sales for Givaudan-Delawanna and its affiliate, the Sindar Corporation. The appointment consolidates the sales management of both companies. Mr. Horsey joined Givaudan in 1943 as manager of the Industrial Products Division. He was appointed sales manager of the Division in 1948 when its sales functions were absorbed by the Sindar Corporation.

R. E. Horsey

BARRETT

T. J. Kinsella has been appointed president of the division. He was formerly executive vice-president of the firm, a division of Allied Chemical & Dye Corporation, New York. Mr. Kinsella joined Barrett in 1947. From 1941 to 1947, he served as price executive of the industrial machinery branch in the old Office of Price Administration, as well as OPA representative on the War Procurement Policy Board.

STALEY

Leonard S. Pearl has been appointed sales manager and will drect the firm's expanding sales activities, particularly in the development of new dealer and distributor outlets. Mr. Pearl was formerly general sales manager in the midwest and west coast areas for a large paint and wall paper distributor and manufacturer.

AMERICAN CYANAMID

H. H. Suddard has been named branch manager of the Coating Resins Department. He will be responsible for coating resins sales and service in Illinois, Missouri, Kansas, Colorado, Iowa, Minnesota, Wisconsin and northern Indiana. Mr. Suddard joined Cyanamid's Industrial Chemicals Division in 1928. Prior to his recent appointment, Mr. Suddard served as assistant district sales manager of the Industrial Chemicals Division in the midwest. He has been in the paint and varnish industry for almost 30 years.

H. H. Suddard

A Cordial Welcome To The Paint Industry

For many years we have been serving manufacturers who demand the ultimate in technical service and prompt attention in filling raw material needs.

John H. Calo Company offers paint manufacturers in the New York Metropolitan area a complete line of raw materials produced by America's leading manufacturers.

For a listing of the products we handle, convenient for filing and future reference write today.

During your visit to the National Paint convention at Chicago (November 17 through November 19th) we cordially invite you to visit our headquarters at The Palmer House.

JOHN H. CALO COMPANY
INCORPORATED

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WHITEHALL 3-6866

PLASKON

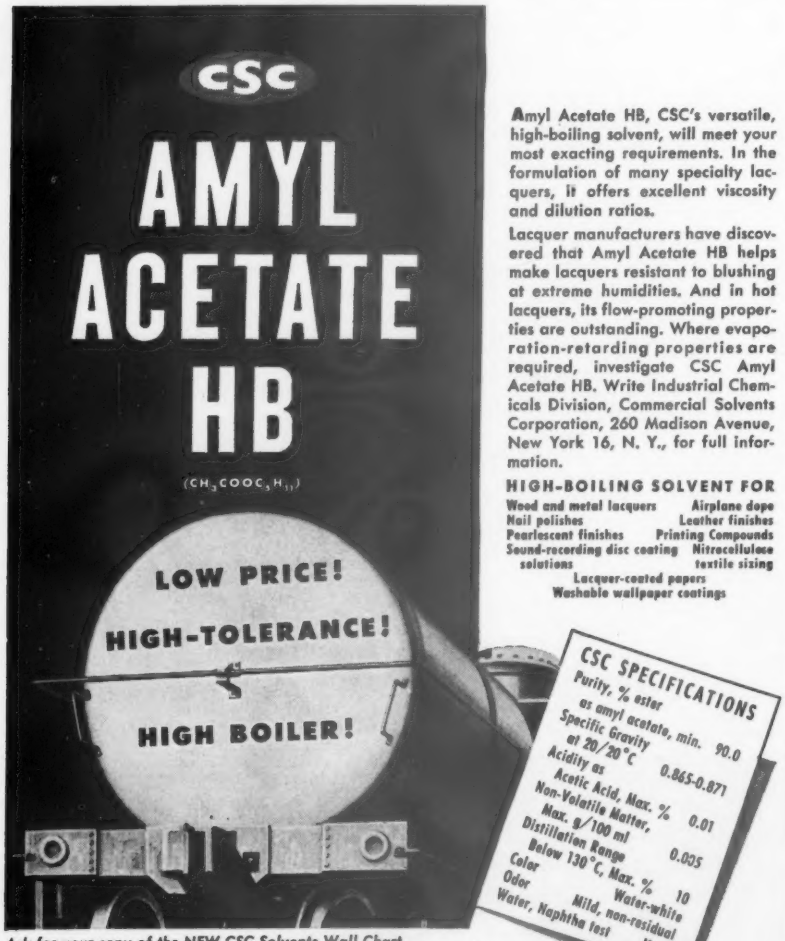
Kenneth A. Earhart has been named to the newly created post of manufacturing manager, coating resins department of the Plaskon Division. He has had 22 years experience in coating resin research and manufacture. Mr. Earhart formerly served 13 years with the U. S. Industrial Chemicals Company where he was director of resin research from 1942 to 1951, and assistant coordinator of resin technical development, 1951 until his recent resignation. He is the inventor of six patented resin developments and has particular experience with alkyd and silicone types.

K. A. Earhart

In addition, Mr. Earhart played an important part in designing and operating the first Dowtherm-heated alkyd resin kettle in the United States, equipment now accepted as standard in resin manufacturing.

LOWE

Five sales officials have been appointed to new posts. The men and their new positions are: **C. C. Satmary,** former branches division manager, to sales promotion manager; **Warren Seckel,** former branches division merchandise manager, to branches division manager; **Russell Lanich** has the new post of branches division coordinator; **Emerson E. Livingston** has been transferred to the north central district headquarters in Chicago as supervisor of branches, and **Richard Butler** has been transferred to the southern district to expand a sales program in the Tampa, Fla., area.



Amyl Acetate HB, CSC's versatile, high-boiling solvent, will meet your most exacting requirements. In the formulation of many specialty lacquers, it offers excellent viscosity and dilution ratios.

Lacquer manufacturers have discovered that Amyl Acetate HB helps make lacquers resistant to blushing at extreme humidities. And in hot lacquers, its flow-promoting properties are outstanding. Where evaporation-retarding properties are required, investigate CSC Amyl Acetate HB. Write Industrial Chemicals Division, Commercial Solvents Corporation, 260 Madison Avenue, New York 16, N. Y., for full information.

HIGH-BOILING SOLVENT FOR

Wood and metal lacquers · Airplane dope · Nail polishes · Leather finishes · Pearlescent finishes · Printing Compounds · Sound-recording disc coating solutions · Nitrocellulose textile sizing · Lacquer-coated papers · Washable wallpaper coatings

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AMMONIA • NITROPARAFFINS • SOLVENTS • PLASTICIZERS • INTERMEDIATES

H. Smith

C. W. Patton

BAKELITE

Howard Smith has been appointed manager of the newly formed sales unit, the Industrial Products Department. The new department will be responsible for the operations of the consolidated Surface Coatings Division, Halowax Products Division and the Sheet and Foil Division. **Carl W. Patton** has been named manager of the combined Surface Coatings Division, which will be responsible for operations heretofore conducted separately by the former Thermosetting Department Coatings and Adhesive Materials Division. M. E. Delaney has been named manager of the Halowax Products Division and T. W. Sharp will continue as manager of the Sheet and Foil Division. The creation of the new department of Bakelite's program to consolidate its sales activities.

A-D-M

Kenneth E. Holt has been appointed Control Director of the Oils and Meal Divisions. He was formerly assistant research director for Anheuser Busch, Inc. Mr. Holt will assume responsibility for the operation of Archer-Daniels-Midland's control laboratories for the linseed, soybean, feed and special oils production facilities. His background in industrial chemistry includes several years as control director for the Cole Chemical Company.

MARTIN-SENOUR

William F. Burns has been promoted to manager of the Chicago sales division. He has been with Martin-Senour in a sales capacity for 27 years and director of field operations for the past two years.

WARWICK

George W. Ullman, newly appointed president of the Warwick Wax Company, Inc., recently announced that he planned to separate the management of Warwick Wax from that of the Warwick Chemical Company.

Maurycy Bloch, vice-president of Warwick Wax Company, Inc., has been elected director in charge of operations and will be assisted by John J. Fish, director of research and refining.

The FORMULATOR'S DIGEST

VEHICLES for Alkyd Based Flats and Rubber Based Flats

Alkydol S-2020

An inexpensive alkyd resin for the preparation of high grade, easy brushing, self-sealing flat wall enamels. Features fast-dry—flexibility and washability.

Alk-O-Mers 8106-8200

Companion vehicles developed for rubber base paints with better adhesion, washability and stability.

SPECIFICATIONS

		ALK-O-MERS	
	S-2020	8106	8200
Solid content by weight	49—51%	49—51%	48—50%
Solvent	Mineral Spirits	Water	Water
Viscosity, Gardner-Holdt Scale	U-V	21,000 cps	6,500 cps
Type of resin	Phthalate Alkyd Oil and Resin Modified	Alkyd Resin Emulsified	Rubber and Alkyd Resin Emulsified
Type of oil	Soyabean		

We Invite You—

to test these quality resins in your own formulations—write for test samples.

ALKYDOL *Laboratories, Inc.*

CONTINENTAL

Lenvik Ylvisaker has been appointed general manager of the Eastern Division's northeastern district and **W. Neuman** named general manager of the Eastern Division's southeastern district. In the newly created positions, both men will have full responsibility for sales and manufacturing operations in their respective districts. Mr. Ylvisaker joined Continental in 1950 as assistant to the division manager of manufacturing. His most recent position was as manager of Continental's Pittsburgh plant. Mr. Neuman joined the firm in 1940 as a chemical engineer in the research department in Chicago. He subsequently served as assistant manager of customer research, Eastern Division, product sales manager and director of product sales.

Lenvick Ylvisaker

W. B. Larkin has been named division manager of sales, Central (Metal) Division and **P. L. Brachle** has been appointed to Mr. Larkin's former position of sales manager — general line. Both men are located at Continental's Chicago office. Mr. Larkin joined Continental in 1925 in the manufacturing department. He served successively as sales manager, Milwaukee district; Chief, Metal Can Division, War Production Board; sales manager, Chicago city district; and sales manager-general line, prior to his present assignment. Mr. Brachle was with Continental from 1917 to 1948. He returned in 1950 and, until his present position, was assistant to the manager of sales.

NAFTONE

Harold M. Johnson has been appointed vice-president and will be responsible for the marketing of the various chemical products handled by Naftone, Inc. He received his initial training in the manufacturing end of protective coatings at the Murphy Varnish Company, Newark, N. J., where, after spending two years in the varnish stacks, paste and milling departments, he was made chief chemist. From 1931 to 1939, Mr. Johnson was active in the resin business with Beck Koller & Co. (Reichhold Chemicals, Inc.), first as a director of technical service and later as vice-president in charge of eastern sales. In 1939 he became vice-president in charge of sales of The Nuodex Products Company and held this position for 12 years. In the fall of 1951, Mr. Johnson formed H. M. Johnson, Inc., to evaluate and market relatively new chemical raw materials for the paint and allied industries. He will make his headquarters at the main office of Naftone, Inc., 515 Madison Ave., N.Y.C.

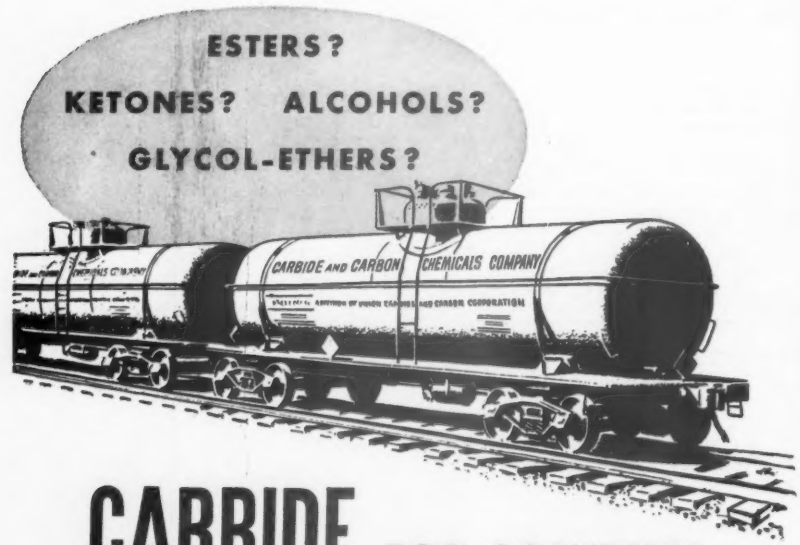
H. M. Johnson

ATLANTIC REFINING

Alfred H. Milask has been appointed eastern sales manager of Chemical Product Sales and transferred to the company's headquarters in Philadelphia. Since 1948 he had been serving as sales representative for Atlantic's Southern territory, operating out of the regional offices in Charlotte, N. C. Mr. Milask is succeeded by Willard E. Smith who joined the company after nine years experience in chemical research and sales engineering in the Southern textile industry. Mr. Milask became associated with Atlantic in 1939. After three years service in the firm's Philadelphia refinery, he was transferred to the Research and Development Department as an associate chemist, the post he held until his Southern assignment.

BROWN-ALLEN CHEMICAL

Dan D. Downes has been appointed sales manager with headquarters at 15 Moore St., New York 4, N. Y. This firm will engage in manufacturing, chemical processing, importing and distribution of vegetable oils, and vegetable oils specialties.



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When you need solvents, check first with "solvent headquarters." If you use a variety of formulations, it pays to standardize on CARBIDE solvents. More than 50 esters, ketones, alcohols, and glycol-ethers give you a wide choice of solvent properties for all types of coatings.

Warehouse stocks assure quick local deliveries of less than carload lots. Tank car and carload lots are shipped from our plants, and tank truck service is available in most leading industrial areas.

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UCC

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In Canada: Carbide and Carbon Chemicals, Limited, Toronto

ROBERTSON FINISHES

Edwin **Hogstrom** has been added to the laboratory staff, in charge of formulation and development work on stains, fillers and related products for the furniture industry. Mr. Hogstrom has had wide experience in the wood finishes field including a number of years as superintendent of finishing in a furniture manufacturing plant. He has been a frequent contributor of articles on furniture finishing to various trade publications and has acted as a consultant to the furniture industry on production and handling problems.

Edwin Hogstrom

GENERAL PAINT

John Oscarson has been named assistant technical director. His headquarters are at the Administrative Laboratory in San Francisco. Mr. Oscarson previously worked for General Paint from 1946 to 1948 as a chemist. Since then he had been associated with several local paint firms.

DAVISON

Burtin W. Graham has been appointed director of technical service. He was formerly assistant general sales manager, industrial chemical department. **D. P. Barrett** succeeded him at this post. Mr. Barrett was formerly with Davison's New York sales office. Mr. Graham came to Davison in 1944 from the Activated Aluminum Corporation. Mr. Barrett joined Davison in 1946.

HILTON-DAVIS CHEMICAL

Norman Moore has been appointed chemist in charge of the newly-opened technical sales laboratory, serving the protective coatings industry. Mr. Moore has been associated with the paint and varnish field for ten years, specializing in trade sales and industrial applications. Prior to joining Hilton-Davis, he was a chemist at the Perfection Paint and Color Company, Indianapolis, Ind.; Frederick A. Stresen-Reuter Company, Chicago, Ill., and the Interchemical Corporation Finishes Division, New York and Cincinnati, Ohio.

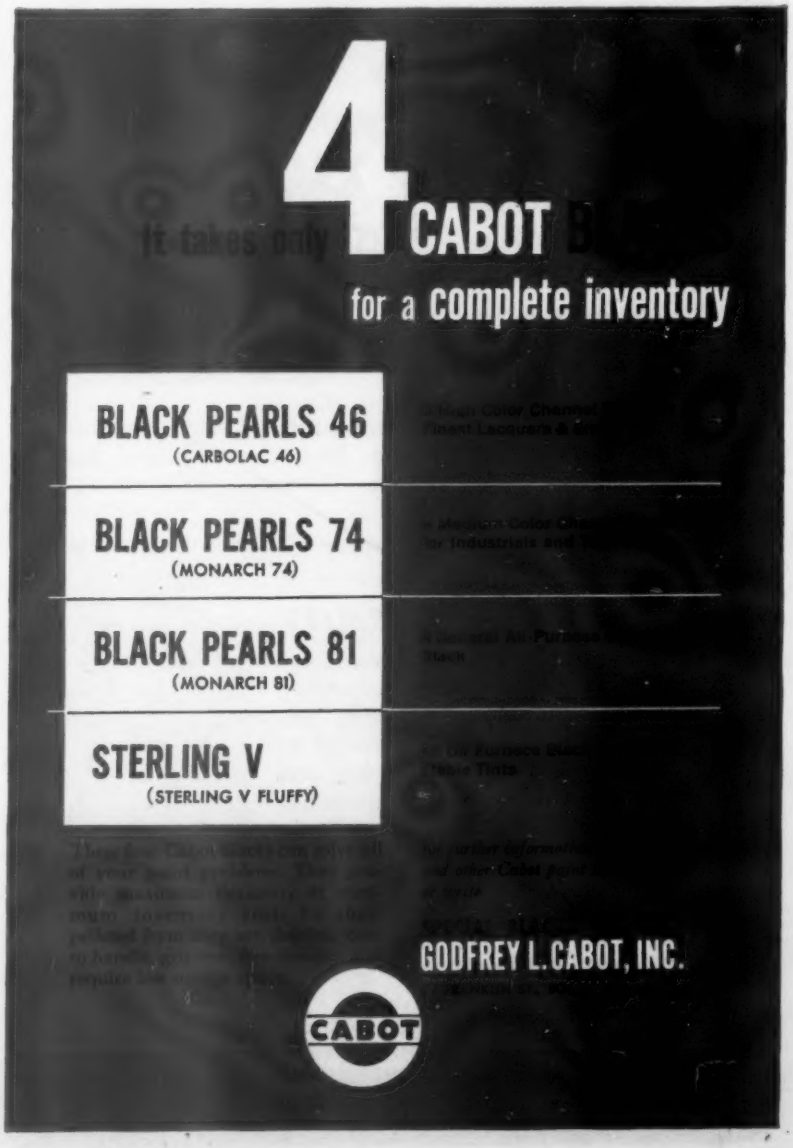
Norman Moore

HEYDEN

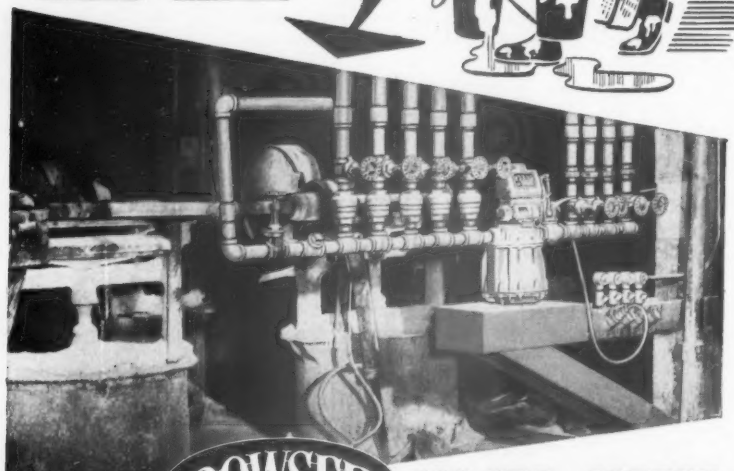
John P. Remensnyder has been elected to the newly created office of Chairman of the Board. **Simon Askin** was elected to president of Heyden, Mr. Remensnyder's former position, and **Barrett Brown,** partner of R. W. Pressprich and Company, was elected a director of the firm, replacing Dr. Donald B. Keyes who resigned. Mr. Remensnyder has been associated with Heyden for more than 32 years. He served as vice-president and director of the corporation from 1944 to 1950. He became president in 1950. Mr. Askin has been with Heyden since 1943. He was vice-president in charge of industrial relations and purchasing since 1948. Prior to his present position, Mr. Askin served as president of the American Plastics Corporation, a Heyden subsidiary. He is also a treasurer and director of St. Maurice Chemicals, Ltd., of Montreal, president and director of Pharmaceuticals, Inc., and vice-president and a director of the Layn Corporation.

Ely Balgley, who had been in charge of applications research for Heyden, has been transferred to the Market Development Department and assigned to the promotion of new products.

Another organizational change marked the end of the Heyden Management Committee whose members included Mr. Remensnyder, Mr. Askin, Dr. Ralph N. Lulek and Paul van der Stricht. Dr. Lulek continues as vice president and director and Mr. van der Stricht continues as secretary and director.



The OLD WAY WAS NEVER EASY LIKE THIS



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. . . FOR SAFE, PRECISE PAINT-MAKING!

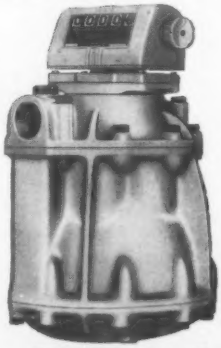
Bowser Xacto meters can simplify your paint-making habits, too! Now, the measurement and distribution of liquid ingredients in many paint, lacquer and varnish plants is safer, easier, more accurate and less costly than ever before—thanks to Bowser Xacto meters.

Compare the two methods (yes, bucketing is still extensively used) . . . and it's easy to see why Xacto can save labor, time . . . prevent waste from spillage . . . reduce accidents . . . and minimize fire hazards.

Chances are Bowser Xacto meters will more than pay for themselves within the first year.

FOR PRODUCT UNIFORMITY

For more than a quarter of a century Bowser Xacto meters have been widely used wherever extreme accuracy has been an important requirement. Xacto meters eliminate guesswork . . . they can be set to deliver predetermined quantities and shut themselves off . . . or even print a delivery ticket when desired.



Xacto handles more than 662 different liquids

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CALENDAR OF EVENTS

Nov. 17-19. National Paint, Varnish and Lacquer Ass'n. Annual Convention, Palmer House, Chicago, Ill.

Nov. 20-22. Federation of Paint and Varnish Production Clubs Annual Meeting, Palmer House, Chicago, Ill.

Nov. 18-22. Paint Industries' Show, Palmer House, Chicago, Ill.

Jan. 19-22. Plant Maintenance Conference and Show, Public Auditorium, Cleveland, Ohio.

Production Club Meetings

Baltimore, 2nd Friday, Belvedere Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Cincinnati Club;
Dayton — Nov., Feb., April, Van Cleve Hotel;
Inianapolis — Sept., Claypoll Hotel;
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, El Jardin Restaurant, San Francisco

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Building Trades Employers Assn.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings Only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 2nd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday, 40-8 Club, Buffalo.

PATENTS

Conducted by

Lancaster, Allwine & Rommel

PATENTS AND COPYRIGHTS

424 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel.

WATER REPELLENT FOR WINDOW SURFACES

U. S. Patent 2,612,458. Donald F. Stedman, Ottawa, Ontario, Canada, assignor to The Honorary Advisory Council for Scientific and Industrial Research, Ottawa, Ontario, Canada, a corporation of the Dominion of Canada.

A composition for rendering window surfaces water and rain repellent comprising essentially substituted polysilicane, consisting only of carbon, hydrogen and silicaon and having not less than one Si-Si linkage and at least one of a group consisting of alkyl and aryl radicals attached to at least one Si atom in said linkage, in adixture in a volatile hydrocarbon solvent with a finely divided, inorganic, non-siliceous adhesive-promoting hagent which with rubbing changes said poly-silicane from a form which is soluble in hydrocarbon solvent to one which is insoluble therein and selected from a group consisting of carbon black, rouge, barium sulphate, lithipone and the precipitated fluorides of calcium, barium, strontium and lithium.

A window surface having thereon a composite film consisting essentially of adherent substituted polysilicane consisting only of carbon, hydrogen and silicon and having not less than one Si-Si linkage and at least one of a group consisting of alkyl and aryl radicals attached to at least one Si atom in said linkage, and on the adhering polysilicane a non-polar wax composition consisting essentially of 19 to 38% by weight of purified amorphous mineral wax having a melting point of substantially 93°C., 49 to 70% by weight of a paraffin wax having a melting point of at least 64° C., 3 to 10% of petyisobutylene and 3 to 10 % of polyethylene.

STYRENE COMPOUNDS

U. S. Patent 2,609,403. Francis Edward Salt, Banstead, William Webster, Epsom, England, and Eugen Galitzenstein, deceased, late of London, England, by Gertrud Galitzenstein, legal representative, Wallington, England, assignors to The Distillers Company Limited, Edinburgh, Scotland, a British company.

A process for the production of a styrene compound, comprising heating in a reaction zone in the liquid phase a compound selected from the group consisting of chlorethyl benzenes and their nuclear chlor-substituted and alkyl-substituted derivatives in the presence of collidine in a concentration exceeding 0.2% by weight at a temperature between the lowest at which dehydrochlorination takes place and the boiling point of the chlorethyl compound.

WINTERIZED GLYCERIDE OIL

U. S. Patent 2,610,915. Karl F. Mattil, Chicago, Ill., assignor to Swift & Company, Chicago, Ill., a corporation of Illinois.

A glyceride oil composition of improved cold test, comprising a glyceriede oil having incorporated therein a small amount of an oil soluble product to improve the cold test thereof, said product being the polymerization product of esters containing a radical selected from the group consisting of vinyl and substituted vinyl compounds according to the general formula

$$CH_2=\overset{X}{\overset{|}{C}}-Y$$

wherein X is selected from the group consisting of hydrogen and alkyl and aromatic hydrocarbon radicals and Y

Do You Know the 5 Reasons Why

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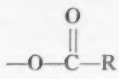
s selected from the group having the formula



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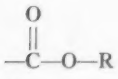


wherein R is selected from the group consisting of a monovalent hydrocarbon radical containing more than 4 carbon atoms and oxy derivatives thereof.

Decolorizing Soybean Oil

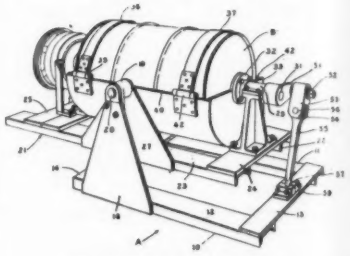
U. S. Patent 2,608,566. Ralph A. Marmor and Wendell W. Moyer, Decator, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill., a corporation of Delaware.

In the process of refining soybean oil obtained by extracting the oil from soybeans with hexane solvent, the improvement comprising the sequential steps of contacting the extract with a color adsorbent at a temperature below about 50°C., and subsequently removing the solvent from the extract by vacuum distillation at a temperature below about 50°C., before any additional refining steps.

Soy Bean Glue

U. S. Patent 2,612,455. Alexander J. Golick, Seattle, Wash., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

In a process of making an aqueous alkaline soybean glue the improvement which consists in mixing a soybean glue base with water to a stirrable consistency in the absence of acidic and strong alkaline reagents and simultaneously stirring the mixture and heat treating it at the range between about 120° F. and 210°F., for between about 3 and 30 minutes, then cooling the mixture to a temperature substantially not in excess of room temperature and adding to the cooled mixture alkaline reagents to form a glue of spreadable consistency.



U. S. Patent 2,610,041

Paint Mixer

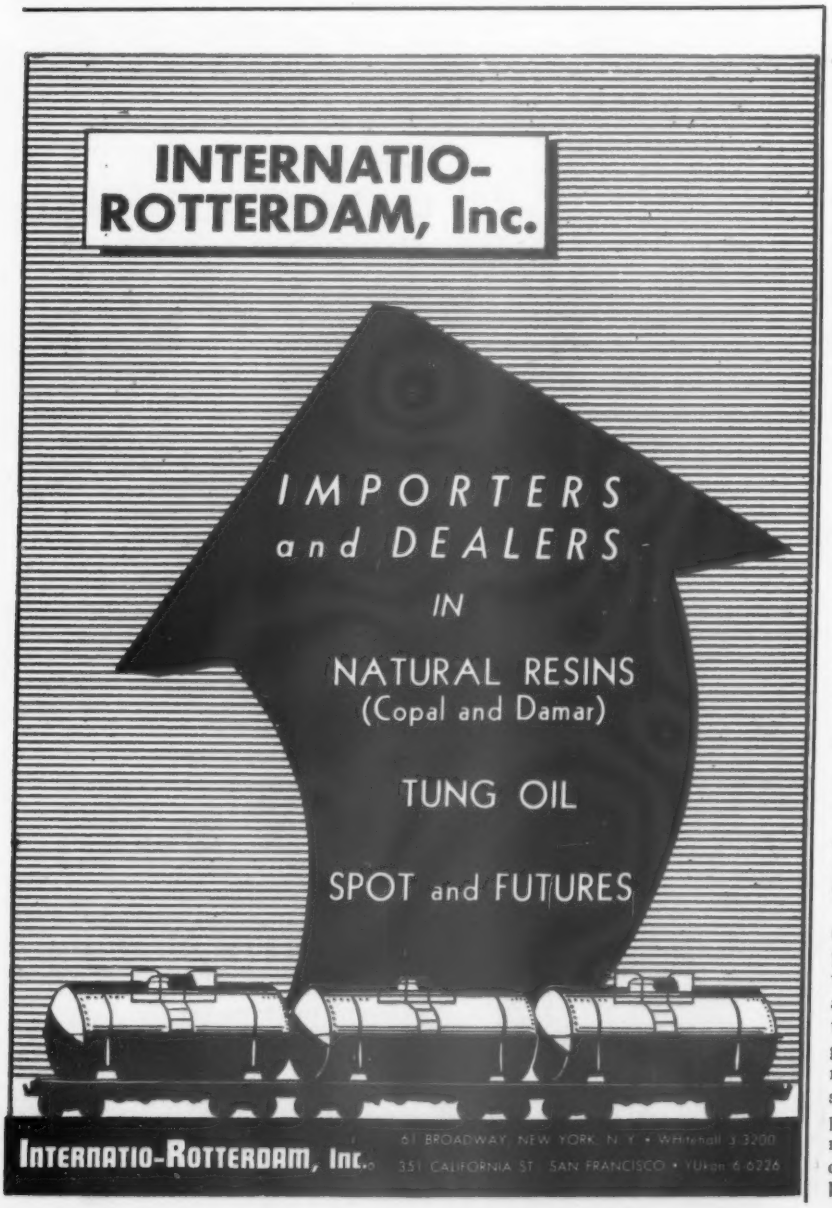
U. S. Patent 2,610,041. Fred Albert Stahl, St. Paul, Minn., assignor to Arlington Machine Works, Inc., St. Paul, Minn., a corporation of Minnesota.

A paint mixer for mixing drums of material comprising a base, a pair of upwardly extending supports thereupon a pair of aligned pivots supported by said supports, a frame tiltably supported intermediate its ends by said pivots, a pair of bearings mounted upon said frame near opposite ends thereof on opposite sides of the axis of said pivots, a drum support rotatably supported between said bearings, a crank rotatable with said drum support, a connecting rod connecting said crank and said base for tilting said base upon rotation of said drum support, the connection between the rod and base being substantially on a vertical plane through the axes of said bearings, and means for rotating said drum support.

Superbodied Oils

U. S. Patent 2,607,784. James A. Arvin, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

A process for the manufacture of superbodied fatty oils free from gel particles and above 14 minutes in viscosity, which comprises heat-bodying an unsaturated fatty acid polyester oil to incipient gelation within a 500 degrees F. to 625 degrees F. temperature range, blowing the said polyester with steam while maintaining said temperatures until the viscosity is again more than 14 minutes, and thereafter cooling the hot mass to inhibit further bodying action.



Styrene-Butadiene Copolymers

U. S. Patent 2,606,163. Earl D. Morris and Gerald A. Griess, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., a corporation of Delaware.

In a method of interpolymerizing styrene with an unsaturated rubbery polymer of an aliphatic conjugated diolefine, having from 4 to 6 carbon atoms in the diolefine molecule, the steps which consist in heating a solution, comprising from 98 to 85 parts by weight of styrene, from 1 to 15 parts of the unsaturated rubbery reactant, and from 0.5 to 5 parts of at least one addition agent of the class consisting of higher fatty acids, substantially free of conjugated olefinic linkages and containing at least twelve carbon atoms in the molecule, and esters of such higher fatty acids with unsubstituted saturated lower aliphatic alcohols, containing less than seven carbon atoms in the molecule, in a closed vessel at temperatures between 50° and 100° C. until approximately half of the styrene is polymerized and thereafter bringing the mixture to temperatures between 100° and 240°C., while preventing the mixture from becoming heated to temperatures above 175° C. for more than 10 hours during the reaction.

Lead Titanate Pigments

U. S. Patent 2,607,659. Frank O. Rummery, Baltimore, Md., assignor to The Glidden Company, Cleveland, Ohio, a corporation of Ohio.

The method of preparing lead titanate pigment directly in a single calcination from pigmentary titanium dioxide and reactive lead oxide which consists of: providing an intimate mixture composed essentially of calcined, pigmentary titanium dioxide having a particle size below about 0.5 micron and reactive lead oxide having a particle size below about 0.5 micron, said mixture being free of metallic lead and being proportioned so as to have therein at least one and not more than about 1.2 mols of TiO_2 per mol of lead oxide; and calcining said mixture directly to lead titanate pigment by heating it between about 600°C. and 750°C. in a non-reducing to oxidizing atmosphere until all of the lead oxide has become combined chemically with the titanium dioxide and the resulting lead titanate has a particle size of desired pigmentary dimensions below about 0.5 micron.

DRYING OILS

U. S. Patent 2,610,161. Orville L. Polly, Long Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif., a corporation of California.

A modified drying oil prepared by copolymerizing between 20% and 80% by weight of a drying oil selected from the class consisting of raw drying oils, dehydrated castor oils, synthetic drying oils consisting of the dehydroxylated glycerol and pentaerythritol esters of alpha hydroxy acids and estolides and mixtures thereof derived from oxidized paraffin wax, and synthetic drying oils consisting of glycerol and pentaerythritol esters of unsaturated fatty acids having 10 to 20 carbon atoms and containing at least 2 unsaturated groups per molecule and 20% to 80% by weight of a mixture containing between 40% and 95% by weight of a compound selected from the class consisting of styrene, alpha methyl styrene and the methyl, ethyl and propyl ring substituted styrenes and 60% to 5% by weight of an ester selected from the group consisting of the diallyl and dimethallyl esters of saturated anphatic dicarboxylic acids having more than 3 and less than about 7 carbon atoms in the acid molecule, said copolymerization being effected at a temperature between about 250° F. and 600° F.

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TECHNICAL Bulletins

PRODUCTS & SERVICES

Publication of the third edition of "*Products and Services of American Cyanamid Company for Industry and Agriculture*" has been announced by the firm. The illustrated book contains a convenient listing and description of the products and servies that American Cyanamid is now offering to industry and agriculture. The book also outlines the divisional structure through which such products are sold.

Copies of the new publication are available upon written request to the American Cyanamid Company, 30 Rockefeller Plaza, New York 20, New York.

STEARATES

Technical booklet on metallic stearates has recently been published by Mathe Chemical Co., 169 Millbank St., Lodi, N.J. When requesting booklet, specify "Stearate Booklet B-2."

DIBUTYL PHTHALATE

A technical service report describing the uses and properties of dibutyl phthalate is now available from the Witco Chemical Company.

Dibutyl phthalate is a stable, colorless and odorless ester of outstanding value as a plasticizer for nitrocellulose lacquers. It is compatible in all proportions with cellulose nitrate and has high solvent power for cellulose mixed esters and other synthetic resins.

The high efficiency and compatibility of dibutyl phthalate have led to widespread use in compounding polyvinyl chloride, chloride acetate and vinylidene chloride polymers.

Dibutyl phthalate is also used in polystyrene, polymethyl methacrylate, natural and synthetic rubbers, chlorinated rubbers, alkyd and plasticizing type synthetic resins and phenolic resin laminating varnishes.

For copies of Technical Service Report E-4, write to Witco Chemical Company, 295 Madison Avenue, New York 17, New York.

CHEMICALS

Sixteen page booklet gives a brief background of the company's chemical industry. Included are pictures of the company's manufacturing facilities and a complete discussion of the various products manufactured and their uses. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland, 6, Ohio.

PUMPS

Superpressure pumps are discussed in this sixteen-page bulletin. General specifications, design, models, advantages, principle of operation are covered in detail. Superpressure Div., American Instrument Co., Inc., Silver Spring, Md.

SURFACE ACTIVE AGENTS

Surface-Active Agents Find Widening Uses" is the title of a reprint of article that is now available from Glyco Products Co., Inc., Brooklyn 2, N. Y.

This describes the large number of non-ionic surface-active agents made possible by varying the polyhydric alcohols and fatty acids. The chemical structure and physical properties of these agents are discussed, together with their usage emulsion, paper, textile, leather, rubber, paint, plastic, resin, adhesive, etc. are given.

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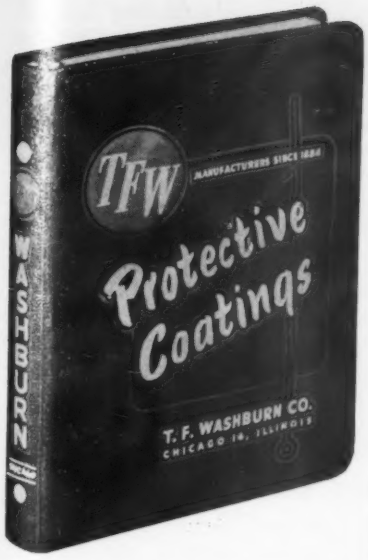

PROTECTIVE COATINGS

With the change from old style methods of cooking to most modern methods of large scale production of alkyds and other vehicles, T. F. Washburn Co. has published a new book entitled "Protective Coatings". In this book the products are described, the uses are suggested with starting point formulas for various paints and constants are set forth on all products. Mr. M. L. Magee, vice-president and general manager of the firm advises that this book in available to all readers of paint production magazines who are interested in the production of paint products, with the firm's compliments. T. F. Washburn Co., 2242 Elston Ave., Chicago 14, Ill.

X-RAY ANALYSES

8-page booklet titled "Facts and Figures on Three Powerful X-Ray Tools for Non-Destructive Analysis" is available from C. J. Woods, Research and Control Instruments Division, North American Philips Company, Inc., 750 South Fulton Avenue, Mount Vernon, N.Y.

Diagrams are used to show the principles of operation for the three instruments, data is given on recommended fields of application, and results to be obtained are explained.

In addition, the booklet illustrates how the simplest film diffraction unit consisting of the basic X-ray generator plus a camera can be converted to Spectrometer and Spectrograph use through the addition of these components.

EPOXY RESINS

Bulletins SC 52-6, SC 52-8, SC 52-13, and SC 52-14 discusses the use of Epon resins in such applications as coatings, laminates, adhesives, and plastics. Properties, solubilities, suggested formulations, and performance data are covered in these bulletins. Shell Chemical Corp., 50 W. 50th St., New York 20, N. Y.

LATEX EMULSIFIER

Technical Bulletin No. 34 describes latex emulsifier and stabilizer, Emcol K-8300, a new tool for controlled "cold" latex polymerization or stabilized latice formulations. The Emulsol Corp., 59 East Madison St., Chicago 3, Ill.

PLASTICIZER

4-page folder listing the characteristics, general properties, solubilities, applications, as well as records of performance of Plasticizer DP-250 in 3 representative types of resins. Folder may be secured by writing to Technical Products Division, E. F. Drew & Co., Inc., 15 E. 26th St., New York, N.Y.

We'll put the proof in your hands

TENLO-70 **controls sagging, running in fast drying enamels without loss of gloss**

THE HANDS BELOW hold one of the plate-glass panels used in testing more than fifty leading enamels, samples of which were purchased from dealers' shelves and tested as follows:

Tenlo-70 was stirred into these samples (7 lbs. per 100 gallons). Controlled 3 mil wet films of both the Tenlo-treated and untreated products were applied to glass panels, which were immediately placed in a vertical position.

Sagging and running has been effectively controlled in the Tenlo-treated sample, and without affecting the brushability or leveling properties. **In some cases of high lustre enamels the gloss has actually been increased, while in no case has the gloss been adversely affected.**

If your product was not among those tested, we will welcome an opportunity to put this same proof into your hands. Send us a sample of your paint or enamel for testing in our laboratory; or write, today, for full information and a sample of Tenlo-70 and make your own test.

PLATY MICA IN VINYLS

Investigation of the effect of platy mica extender on the behavior of vinyl primer materials, Parts 1-2, is covered in technical bulletin No. 11 issued by the Wet Ground Mica Association, 420 Lexington Ave., New York 17, N.Y. Important subjects covered are materials used (formulations), fineness of grind, application, testing procedures, and test results.

STYRENATED CASTOR

Technical Data Report TX-11 discusses formulations, properties, and uses of styrenated dehydrated castor oil, and comparison of an enamel vehicle made with this styrenated product and medium and long oil alkyds are given. Monsanto Chemical Co., Texas Div., Texas City, Tex.

DUST CONTROL

24 page bulletin reports on the use of cloth tube dust collector in 33 typical installations in process industries. American Wheelabrator & Equipment Corp., Mishawaka, Ind.

DRUMS

Specifications and descriptions of returnable-type metal barrels and drums are discussed in a 12-page bulletin issued by the Pressed Steel Tank Co., 1439 So. 66th St., Milwaukee, Wis.

RESIN REVIEW

A recent issue of "Resin Review" published by the Rohm & Haas Co., Resinous Products Div., Philadelphia 5, Pa. contains considerable information which is of interest to coating technologists. Topics covered are: amino resin with good alkyd compatibility, another amino resin which produces good adhesion in metal primers, topcoat for vinyl films, and a low cost acrylic coating.

BUTANOL

General specifications, properties, uses, toxicity, shipping and handling instructions of butanol are covered in detail in Technical Data Sheet No. 9. Similar information on diethyl oxalate is covered in Technical Data Sheet No. 11. Commercial Solvents Corp., 260 Madison Ave., New York 16, N.Y.

TRUCKS

Catalog 54, eight-page booklet in color describes and illustrates the manufacturer's line of industrial trucks and cranes.

The catalog features a section: "How to Select the Right Fork Truck for Your Handling Job." This section outlines the step-by-step procedure for making the most logical fork truck choice.

Other sections in the catalog show at a glance the complete specifications on each Baker product. Specification charts and photos are used to fully describe each model. Also illustrated are the important construction and design features of Baker trucks, and the latest fork truck attachments available for Baker equipment. The Baker-Raulang Co., Baker Industrial Truck Div., 1230 W. 80th St., Cleveland 2, Ohio.

SOLVENTS

Twelve-page bulletin covers two solvents 3-methoxybutyl alcohol and 3-methoxybutyl acetate. Properties and specifications of these two solvents are tabulated together with their use as solvents in lacquer formulation. Tennessee Eastman Co., Kingsport, Tenn.

THE FOURTH DICALITE PLANT

...will add approximately 80% increased production capacity for Dicalite calcined and processed filteraids and fillers

The new plant of the Dicalite Division, Great Lakes Carbon Corporation, at Lompoc, Calif., is now in volume production at a continually increasing rate. It represents over 5 years of engineering, design and construction, and is the largest complete unit for processing diatomite built in the last 22 years. Full designed output will add approximately 80% increased production capacity for Dicalite calcined and processed filteraids, fillers and other materials.

Four Dicalite plants are now running 24 hours a day to produce the maximum tonnage of Dicalite materials to supply the emergency demand.

Even during this extreme pressure for volume production, specifications for performance and quality of each product are readily maintained. Research data are being accumulated to aid in developing new and improved Dicalite products for future industrial use.

DICALITE DIVISION GREAT LAKES CARBON CORPORATION

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PLANT LOCATION

To aid company management and engineers in the selection of the one location for a new plant that will offer the best combination of factors affecting total production cost, Walter Kidde Constructors, Inc., 140 Cedar St., New York 6, N.Y. engineers and builders, has published a brochure entitled "Factors Influencing Industrial Plant Location."

The 12-page, 8½ x 11 in. publication is a compilation of 64 basic questions which management must answer and evaluate in order to select the best site for a new plant.

In the section on "Procedure", the brochure discusses in detail preliminary steps required in a plant location project. Subjects covered in the main section of the brochure include production materials; marketing; transportation and distribution; labor; supervision; utilities, service and fuels; bank facilities; laws and taxes; community attitude towards industry; living conditions; climate; national defense; and site characteristics.

STYRENATED ALKYD

Booklet presents information on styrenated alkyd type resins which can be formulated into baking and drying enamels. Among the topics discussed are: styrenation procedure covering the effect on rate of conversion and reaction product of variations in alkyd acid value, the carboxyl-hydroxyl ratio, the viscosity and type of oil modifier, effect of catalyst type, and amount and ratio of alkyd solids to styrene monomer on the styrenation rate and product characteristics. Monsanto Chemical Co., Texas Div., Texas City, Tex.

COATING THICKNESS

Four-page folder titled "New Standard for Coating Thickness" is available for 10c from the Office of Information Services, New York University College of Engineering, New York, 53, New York.

The paper, which was prepared by Dr. Max Kronstein, research associate of the Research Division of the College, is concerned with the development and use of meth-

DUST
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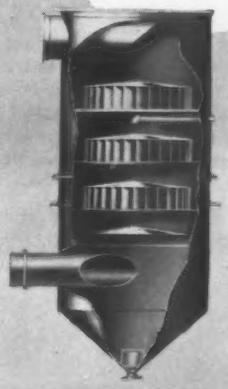
MULTIPLIES WASHING FOR TOP EFFICIENCY



Only Schneible Multi-Wash collectors can give you the benefit of extra washing action that assures maximum removal of all contaminating material.

You can be sure of top efficiency with a minimum of up-keep because the Multi-Wash principle employs no moving parts or nozzles that can wear or clog.

Multi-Wash collectors installed 15 years ago are still operating which proves the Schneible principle gives lasting performance.

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Remove "Fish Eyes", Skins, Incidental Solids and Semi-Solids from Varnish and Lacquer with . . . .

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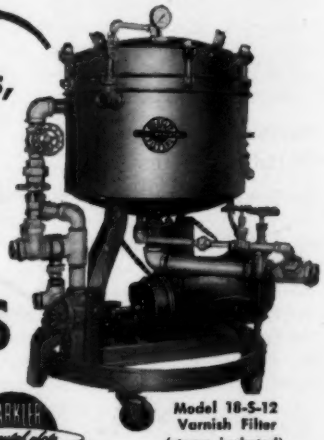
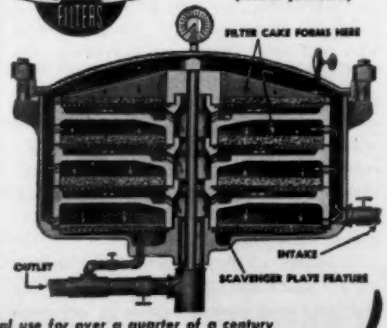


Model 18-S-12 Varnish Filter (steam jacketed)

Many varnish makers now use Sparkler Filters to clarify varnish, lacquers, and other clear liquids. The brilliance and polish obtained by filtering with Sparkler Filters is far superior to results obtained with other methods of clarifying paint products.

See Exhibit
Booth 46
Paint Industries Show



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Makers of fine filtration installations for industrial use for over a quarter of a century

New Books

Surface-Active Agents

Encyclopedia of Surface-Active Agents by J. P. Sisley and P. J. Wood. Published by The Chemical Publishing Co., Inc., 212 Fifth Ave., New York, N.Y. Price $15.00.

Part I deals with the general aspects of surface-active agents, their properties, applications, and methods of manufacture. It also gives a system of classification by which every variety of the modern surface-active agents can be identified by simple symbols.

Among the chemicals covered are wetting agents, detergents, penetrants, foaming compounds, emulsifiers, and dispersing agents. It describes their many applications in the textile industry; leather industry; as industrial and household detergents; in the treatment of metals; in surface coatings; in paper manufacture; as flotation reagents; for the breaking of emulsions; in fat splitting; in soap making; in the rubber industry; in the fruit and vegetable processing; in cosmetics; in inks; in cutting and soluble oils.

Part II is an alphabetical listing of brand-name surface-active agents manufactured all over the world. For most of the items the following information is listed; brand name; manufacturer; identical or similar products; chemical composition; class; appearance; properties; reaction; references; patents; applications; quantities used in different applications.

Fundamental Principles Of Polymerization

Fundamental Principles of Polymerization by G. F. D'Alelio. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. Price $10.00.

Containing particular reference to rubbers, plastics and fibers, the volume is concerned with those minimum fundamentals on which polymer scientists must base their practical work. D'Alelio first defines and classifies polymers and proceeds to a discussion of their reactions and functionality. The non-homogeneity of polymers and their properties, polyreactions, and polymerization processes are described and evaluated, as well as molecular weight determinations, kinetics of polymerizations, reaction loci in polymerization systems, and copolymer compositions and stability of polymers.

A feature of the new book is D'Alelio's clarification and coordination of existing polymer terminology; this he achieves by presenting a series of exact definitions and introducing new terms.

CLASSIFIED ADVERTISEMENTS

Rates: $.20 per word, except those seeking employment, for which rate is $.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

PAINT CHEMIST WANTED — man with at least two years experience in the formulation of trade sales finishes. Excellent opportunity with Raw Material Sales Service Laboratory in New York Metropolitan area. Advise salary desired in reply. All answers will be kept in strictest confidence. Box 142

WANTED TO BUY — Interested in buying a going paint or chemical processing business. Cash or terms as seller may prefer. All replies confidential. Box 143

FOR SALE — McDANEL Porcelain grinding balls in sizes 1½" to 3". Immediate shipment in 100 lb. bags at fraction of new price. General Traders, Inc., 2675 W. Grand Ave., Chicago, Ill.

MATERIAL AVAILABLE — Calcium Sulphate, well known brand, available in 100 lb. quantities. $2.00 per 100 lbs. Box 145

Look at... HYDROCARBON PANAREZ RESINS

AS A QUALITY ECONOMICAL RESIN IN OLEO RESINOUS VARNISHES

PANAREZ resins are compatible in oleo-resinous varnishes with phenolics, ester gums, hydrogenated rosins, coumarone-indene, and many other commonly used synthetic resins. These neutral and inexpensive varnish resins markedly improve chemical and mar resistance of protective finishes.

For economy—for uniformity and consistent high quality—for dependability—Pan American PANAREZ resins are unexcelled.

Whether you purchase in carload or single drum quantities, prompt "on time" shipments from plant, or conveniently located warehouses insure uninterrupted maintenance of production schedules.

	Color Gardner	Softening Point, °F	Iodine Number	Acid Number
PANAREZ 3-210	9	200-220	230	0-1
PANAREZ 6-210	11	200-220	170	0-1
PANAREZ 12-210	16	200-220	60	0-1

PAN AMERICAN CHEMICALS

PAN AMERICAN Chemicals

DIVISION Pan American Refining Corp.

122 EAST 42ND STREET · NEW YORK 17, N. Y.

ODORLESS PAINTS

(From page 35)

Latex Paints

LATEX paint vehicles consist of synthetic resin polymers as the inner phase, emulsified in water (the outer or continuous phase) and therefore may be thinned with water. As stated previously, these paints have been advertised as free from paint odor and, since the public regards water as odorless, it is only natural for them, by association of thought, to consider latex paints as odorless. This is not true and, again, it is necessary to bear in mind that these paints consist of the volatile portion which evaporates to leave the non-volatile or film-forming portion, either of which can contribute odor. Water, which constitutes practically all of the volatile portion, is free from odor when properly purified, but there are other ingredients in this volatile portion such as preservatives of phenol derivation, ammoniacol compounds, and solvents such as pine oil, each of which are sufficiently aromatic to contribute a definite odor. In the non-volatile, the most commonly used copolymers, styrene and butadiene, are not totally free of their respective monomers which have a very distinct, aromatic odor. While it is true that it is not a "painty" type of odor, it is also true that some people may object more to the characteristic "latex-odor" than to the odor of conventional paints. The latex film is essentially in its final form when the solvent is completely evaporated and even though slight oxidation may occur,[8] there is little characteristic odor from the by-products of oxidation. This means that the odor of the drying film is dissipated more rapidly and less apt to "hang" than would be true of an oil paint. Recent developments indicate that latex paints are now being modified with alkyds without any apparent increase in film odor.

It is not the purpose of this article to decide whether alkyd flats in odorless aliphatic solvent or latex paints are the least odiferous, since odor preference varies according to each individual's taste. However, it can be stated that neither are odorless in the strictest literal interpretation, but alkyds provide a closer approach to this ideal objective.

With regard to the whole field of odorless finishes, in order to produce truly odorless types it will be necessary for all constituent raw materials to be odor-free. (This includes thinner that is added by the consumer) In this connection, the drier industry has already taken steps in this direction and undoubtedly other raw material suppliers will follow suit.

The trend toward odorless paints is growing and in time could become an accepted feature, particularly in view of the increased availability of odorless petroleum solvents.

The author expresses his appreciation to several authorities in petroleum industry.

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July 8, 1952.

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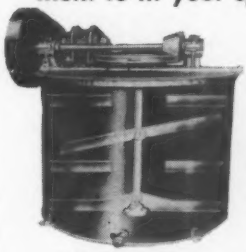
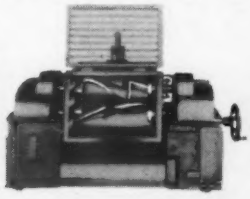
DURABILITY AND DEPENDABLE SERVICE

Over 80 years of Ross experience in the manufacture of Mills and Mixers of all types assures the proper selection of equipment to fit your specific processing requirements.

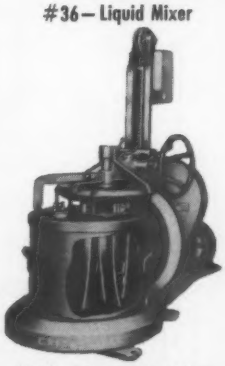


#36 – Liquid Mixer

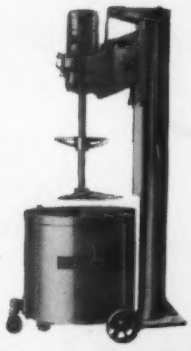


#41L – Heavy Duty Kneader

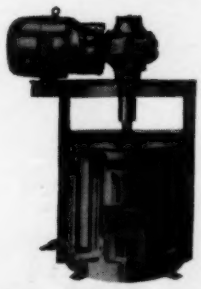
#36RM – Twin Semi-Paste Mixer



#30C – Change Can Mixer



#131AB – Change Tank Mixer



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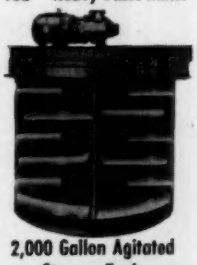
1-Gallon Variable Speed Laboratory Mixer

Mixers available in laboratory, pilot scale, and large production sizes.

Write for further details!



2,000 Gallon Agitated Storage Tank

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(*From Page 33*)

J. M. Lehmann Co., Inc.

Three Roll Mills — Features Sight-O-Matic Control, Pneumatic Control, Drive Tension Adjustment, Dial Indicating Thermometer on water inlet manifold and at each of the roll water outlets, and extra deep hoppers.

The Sight-O-Matic Control enables a mechanical adjustment to be made at each end of the slow and fast rolls. Gauges at these four points show the effects of adjusting the handwheel at that end of the roll. Thus, an operator can equalize the pressure and maintain uniformity of grind along the entire face of the roll.

Take-off is attained by adjustment of knife pressure by means of a regulated air supply to the discharge assembly. A pressure reducing valve in the air supply line controls the knife pressure. A new method of mounting the knife assembly is said to provide perfect blade alignment and uniformity of blade pressure across the entire roll face. The dial indicator in the air line permits predetermined settings and shows the amount of pressure applied to the knife.

Roll temperatures are regulated by a manually operated valve on each roll water feed pipe. A dial thermometer is provided at the water inlet manifold, and another at each of the roll water outlets indicates the temperature of the discharge water from each roll.

For high production, this firm offers a five roll mill.

Morehouse Industries

Morehouse Speedline Mills are availaole in a variety of models for milling operations on materials from water-thin viscosity to heavy paste, and for both corrosive and non-corrosive products.

The principle of these particular mills is based on the action of a grinding stone revolving in a horizontal plane at high speed (rotor), against a stationary stone (stator), through which the material to be processed is fed. The lower (rotor) stone is adjustable in relation to its position to the upper (stator) stone during operation, through a wide range, from positive contact to approximately one-quarter of an inch distance from the upper stone. These mills can be adjusted to obtain various results, including grinding, emulsifying, homogenizing, mixing, dispersing, and disintegrating. The manufacturer claims that the mill design facilitates rapid cleaning of all areas and quick change over from product to product. Product control adjustments are easily made while mills are running.

Patterson-Kelley Co., Inc.

Twin Shell Blender — For mixing dry materials. This involves a combined tumbling or rolling action with a simultaneous transverse movement within the entire mass of material. In addition, a folding action is caused by the combining and dividing of the mass as the blender rotates. According to the manufacturer, this particular design produces a smooth, continuous mixing action at every position of revolution, and results in a rapid blending of materials regardless of varying particle size, shape or density. The gentle action will not break down delicate crystal shapes or generate heat within the material.

Patterson Foundry and Machine Co.

Line of pebble and ball mills. These mills are batch type machines. They are supplied in a wide range of types and sizes. Line of jar mills, Porox balls, flint pebbles, and steel balls. Line of agitator mixers, liquid mixers and side entering agitators.

Paul O. Abbe'

Complete line of Jar mills, ball and pebble mills for laboratory and plant use. Grinding media.

Process Industries Engineers, Inc.

Pie-Flex Portable Mixer consists of a propeller shaft connected with its motor by a flexible drive shaft instead of the usual shaft with a propeller on one end and a motor on the other. The latter is quickly and easily detachable from both motor and propeller shaft. Thus, it can be moved about so easily that it is ready for immediate use anywhere in the plant. Since the motor can be mounted separately and at a distance from the mixer, this unit is suitable for mixing inflammable or explosive liquids.

Troy Engine & Machine Co.

High Speed Roller Mills features a "One Point" adjustment. By means of a single hand wheel the operator can adjust the setting of the apron and feed rolls simultaneously, keeping them parallel and in precise relationship to the fixed center roll. The dial above the gear housing on the hand wheel side indicates the setting, making it possible to duplicate previous runs of like material by merely moving the single hand wheel until the same dial readings are indicated.

Angular mixer for mixing paints and inks prior to milling, pony mixers and colloid mills are also offered.

NO SOLVENT LOSS with

the SHARPLES VAPORSEAL CLARIFIER

• *Another profit-making Sharples feature for producers of pigmented lacquers and enamels.*

Here are other features:

- Remove agglomerates and over-sized particles.
- Selectively classify by particle size.
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Roller-Type Jar Mills — for processing, grinding, pulverizing or mixing dry materials such as pigments, minerals, inks, chemicals, etc., in small quantities.

Laboratory Jar Mill — for mixing and grinding small laboratory batches of material.

3-Way Laboratory Mixer — for mixing solutions, or blending of powders or dry materials in small laboratory batches.

Cradle-Type Jar Mills, Double Jar Mills, Single Jar Mills, Tumbel-Mixer, Drum Rollers, Drum Tumblers, Pail Tumbler and Paint Mixer, "Rocker Roll" Drum Mixer.

Grinding Media.

ACKNOWLEDGEMENTS

We wish to thank the following firms who cooperated with us in supplying information and photographs used in this resume:

Paul O. Abbe, Inc., Little Falls, N. J.

Abbe Engineering Co., New York, N. Y.

Armstrong Paint & Varnish Works, Chicago, Ill.

Baker Perkins, Inc., Saginaw, Michigan.

Bowser, Inc., Fort Wayne, Indiana.

Bramley Machinery Corp., Edgewater, N. J.

Coors Porcelain Co., Denver, Colorado.

The J. H. Day Co., Cincinnati, Ohio.

Entoleter Div., Safety Car Heating and Lighting Co., Inc., New Haven, Conn.

Epworth Manufacturing Co., Detroit, Michigan.

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Kinetic Dispersion Corp., Buffalo, N. Y.

J. M. Lehmann Co., Inc., Lyndhurst, N. J.

Morehouse Industries, Los Angeles, Cal.

The Patterson Foundry and Machine Co., East Liverpool, Ohio.

The Patterson-Kelley Co., East Stroudsburg, Pa.

Process Industries Engineers, Inc., Pittsburgh, Pa.

Charles Ross & Son Co., Brooklyn, N. Y.

Troy Engine & Machine Co., Troy, Pa.

U. S. Stoneware Co., Akron, Ohio.

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•

A-D-M Celebrates Its 50th Anniversary

The Archer-Daniels-Midland Company of Minneapolis, Minn., celebrated its 50th Anniversary October 1.

Thomas L. Daniels, president of A-M-D and son of the company's founder, and Samuel Mairs, chairman of the firm's board of directors, received a cake to make the firm's golden anniversary.

When A-D-M started business in 1902 they made only three products: raw linseed oil, boiled linseed oil and linseed cake or meal. Today the firm manufactures more than 700 standard products at its 120 plants spread throughout the United States and Canada.

•

66 Sessions To Highlight Plant Maintenance Conference

Sixty-six separate sessions will highlight the largest Plant Maintenance Conference ever to be held, at the Public Auditorium, Cleveland, between January 19 and January 22, according to a recent announcement by Clapp & Poliak, Inc., New York, which conducts the conference.

The Plant Maintenance Show which will be held in conjunction with the Conference, will also set a new mark for the number of displays exhibited and the area space used by a show in the Plant Maintenance field, the announcement said.

Virtually every type of equipment needed for maintenance operations will be on display covering an area of 110,000 square feet, the announcement added.

The conference, which annually attracts more than 2,500 plant executives, will include three panels, 16 sectional conferences, 42 roundtables, four plant tours, and a banquet.

Maintenance problems in the automotive, chemical, electrical, manufacturing, food processing and packaging, foundries, paper mills and paper products, petroleum refining, printing and binding, rubber goods, steel mills and fabricating plants, and textile industries, will have special treatment.

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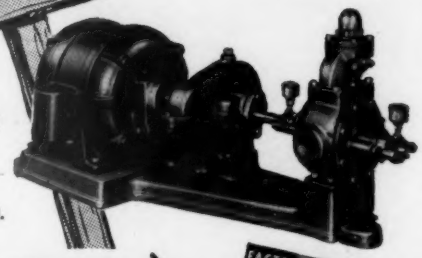

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The Elgin Model 'H' fills oil and water base paints, places covers, and seals all sizes of cans with double friction covers (1/32 gal. to 1 gal.) — *completely automatic.* Quick changeover and ease of cleaning are additional features which account for the popularity of the Model 'H' in both large and small plants.

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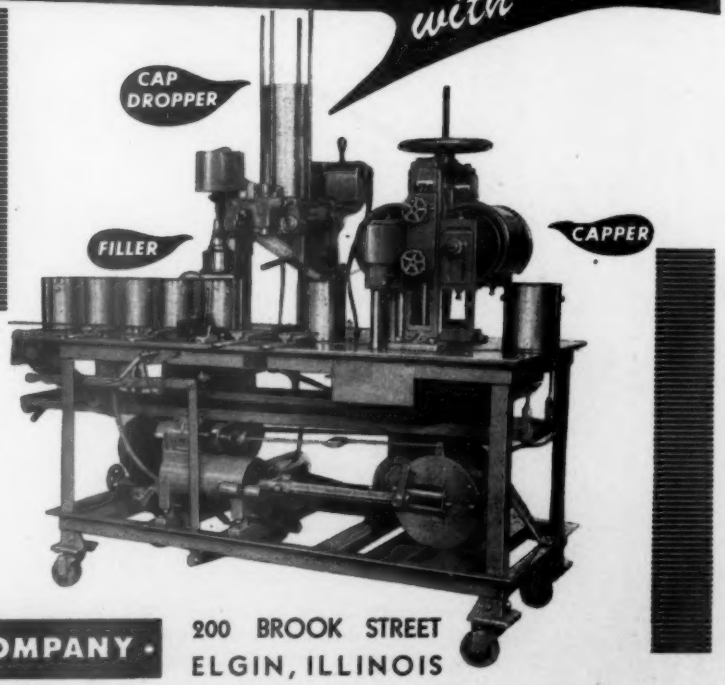


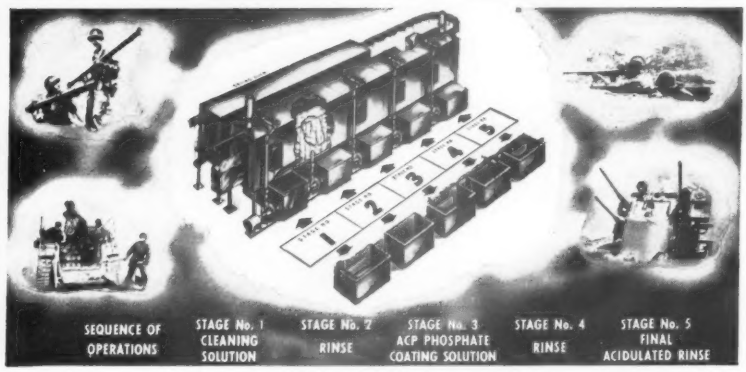
ELGIN MANUFACTURING COMPANY

200 BROOK STREET
ELGIN, ILLINOIS

AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: METAL PRESERVATION AND PAINT PROTECTION WITH ACP PHOSPHATE COATING CHEMICALS



U.S. ARMY PHOTOGRAPHS COURTESY OF "ORDNANCE MAGAZINE"

Typical spray and dip phosphating equipment and some ordnance products that are now given a protective phosphate coating for extra durability under all kinds of severe exposure conditions. Both military and civilian applications of ACP phosphate coating chemicals are shown in the chart below.

SELECTION CHART OF ACP PROTECTIVE COATING CHEMICALS FOR STEEL, ZINC, AND ALUMINUM

METAL	ACP CHEMICAL	OBJECT OF COATING	TYPICAL METAL PRODUCTS TREATED	GOVERNMENT SPECIFICATIONS
STEEL	"GRANODINE" Zinc Phosphate Coating Chemical	Improved paint adhesion	Steel, iron, or zinc fabricated units or components, automobile bodies, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, rifles, small arms, belt links, cartridge tanks, vehicular sheet metal, tank bolts and links, recoilless guns, etc.	MIL-S-5002 JAN-C-490, Grade 1 JAN-F-495 U.S.A. 57-0-2, Type II, Class C U.S.A. 51-70-1, Finish 22.02, Class C U.S.A. 50-60-1 16 E4 (Ships)
STEEL	"PERMADINE" Zinc Phosphate Coating Chemical	Rust and corrosion prevention	Nuts, bolts, screws, hardware items, tools, guns, cartridge clips, fire control instruments, metallic belt links, steel aircraft parts, certain steel projectiles and many other components.	MIL-C-16232 U.S.A. 57-0-2, Type II, Class B U.S.A. 51-70-1, Finish 22.02, Class B Navy Aeronautical M-364 U.S.A. 72-53 (See An-F-20)
STEEL	"THERMOIL-GRANODINE" Manganese-iron Phosphate Coating	Wear-resistance anti-galling, safe break-in of friction or rubbing parts. Rust proofing.	Friction surfaces such as pistons, piston rings, gears, cylinder liners, camshafts, tappets, crankshafts, rocker arms, etc. Small arms, weapon components. Hardware items, etc.	MIL-C-16232 U.S.A. 57-0-2, Type II, Class A U.S.A. 51-70-1, Finish 22.02 Class A Navy Aeronautical M-364 U.S.A. 72-53 (See AN-F-20)
STEEL	"GRANODRAW" Zinc-iron Phosphate Coating	Improved drawing, extrusion, and cold forming	Blanks and shells for cold forming, heavy stampings; tubs; tubing for forming or drawing; wire; rod; etc.	———
ALUMINUM	"ALODINE" Protective Coating	Improved paint adhesion and corrosion resistance	Aluminum products of similar design such as refrigerator parts, wall tile, signs, washing machine tubs, etc; aircraft and aircraft parts; bazookas (rocket launchers), helmets, belt buckles, clothes dryers, clothesline, rocket motors, etc., aluminum strip or sheet stock.	MIL-C-5541 (See also QPL-5541-1) MIL-S-5002 AN-F-20 U.S. Navord O.S. 675 16 E4 (Ships) AN-C-170 (See MIL-C-5541) U.S.A. 72-53 (See AN-F-20)
ZINC	"LITHOFORM" Zinc Phosphate Coating Chemical	Improved paint adhesion	Zinc alloy die castings; zinc or cadmium plated sheet or components; hot dip galvanized stock; galvanneal; signs; siding; roofing; galvanized truck bodies; etc.	QQ-P-416 RR-C-82 JAN-F-495 AN-F-20 U.S.N. Appendix 6 U.S.A. 72-53 (See AN-F-20)

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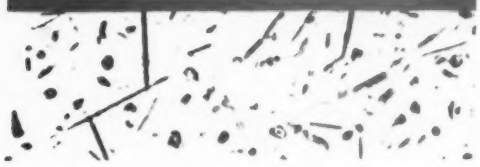
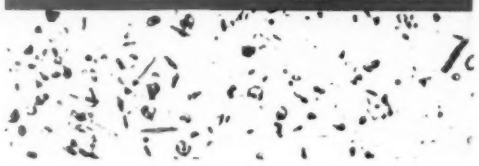


medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints



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